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MANPOWER AND AGRICULTURAL RESOURCES

IN THE APPALACHIAN REGION

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Permission was given by the Virginia, West Virginia, and North Carolina Agricultural Experiment Stations to review the tabulations made by members of their staffs from sample work sheets of the 1943 Farm Manpower Inventory.

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## SUMMARY

War requirements for manpower and for increased agricultural production have made necessary a re-examination of the relationships of population to farm resources in the Appalachian Region. Analysis of data from the Census of 1940 indicates that in this region large numbers of people are working on uneconomically small units of poor land and are inadequately employed. Fort two percent of the classified farms in the region had less than \$400 gross value of products in 1939, as compared with 32 percent of the farms in the United States. Although in 1940 the region had 18.9 percent of the farm population of the Nation, it received only 8.6 percent of the income from farm products sold or traded in the United States in 1939. Yet little can be done to add to land resources. The total acreage of crops and pasture can be expanded by including about 2½ million acres of cropland now idle or fallow. Extensive areas of steep lands, which are now being tilled, should be used for grazing or allowed to revert to forest. Contribution to war needs can be made most readily in this region by shifting production from less essential to more essential crops. This will not make much greater use than at present of the underemployed manpower in the region.

An important contribution of the farm population of the Appalachian Region to the war effort has been the movement to industry and the armed forces of about 800,000 persons, including 500,000 actual or potential farm workers. There has been an added net loss from the on-farm labor supply of about 350,000 farm workers - persons who, although they continue to live on farms, have taken nonfarm jobs. At the beginning of the defense effort, many persons were either unemployed or not in the labor force, so these losses have not greatly affected the volume of farm employment in the region. In April 1943 the total farm employment was only about 100,000 short of the number 3 years earlier, but its composition was very different from that of the Census date, rural farm males having decreased in number and women and children having increased.

A study of the labor requirements of the 1943 goals in crop and livestock production and of probable farm-employment levels indicates that, despite the loss of manpower since 1940, there will be a considerable degree of underemployment in the region this year. It is estimated in this report that about 450,000 workers, including approximately 300,000 rural-farm males of working age, could be made available either in agriculture elsewhere, or in industry for more productive war employment than they now have. Release of such a number of farm men would involve a considerable reduction in number of farms through retirement of land least suitable for farming and through consolidation of units, where this is practicable. The loss of production due to the withdrawal from operation of these farms would be small and could more than be offset through improved practices on the remaining farms and through increased production on the more productive farms of the Nation, made possible by a contribution of manpower from the Appalachian Region.







## MANPOWER AND AGRICULTURAL RESOURCES IN THE APPALACHIAN REGION

### AGRICULTURAL RESOURCES: PATTERNS OF USE

The effectiveness with which the land resources of the Appalachian Region are being used varies widely as does the possibility of improvement in their use. Soil types and topography are very diverse. Types of utilization range from intensive vegetable culture in the coastal plain, to extensive cattle grazing in the Appalachian highlands. <sup>1/</sup> Large areas of the five States are not suitable, because of topography, for any type of agricultural enterprise.

Against this background numerous economic and social problems have developed. Maldistribution of population, in relation to resources, and low incomes characterize large areas within the region. Wartime demands for maximum production require changes both in the distribution of population and in land use. Resource adjustments that were difficult to make under the strain of economic depression, are now possible and are highly desirable as a contribution to the war.

Farming enterprise in the Appalachian Region is dominated by the pressure of a relatively large farm population upon agricultural resources. From the time settlement began, patches of land that are not suitable for agriculture have been cleared. As rural living became more commercialized, and as advances were made in the technology of production, the margin of economic operation has shifted. At present, large numbers of people continue to till poor land, with hand labor, when more productive alternatives are available.

Of all land in the region, 66.4 percent is in farms (table 1). The proportion varies from 58 percent in West Virginia to 79 percent in Kentucky. The 83 million acres of land in farms is divided almost evenly between cropland, pasture, and woodland. Cropland as a proportion of all land in farms is smallest in West Virginia. In both Kentucky and West Virginia a larger acreage of farm land is devoted to grazing than to any other use.

Insofar as potential use is concerned, it is doubtful whether it is possible to expand the acreage, either of cropland in use or of pasture much beyond the point set by taking up such idle cropland as can be used to advantage and by converting to pasture extensive areas of steep lands, now tilled, that should either be used for grazing or allowed to revert to forest.

The land that could be cleared or drained for cultivation would probably not greatly exceed the area which, in the interests of long-time conservation, should be removed from cultivation. Immediate possibilities of expanding land in use for crops relate chiefly to plowable pasture and idle cropland. According to the 1940 Census of Agriculture there were nearly 4.5 million acres of idle and fallow cropland in the region. In 1942 this figure had been reduced to less than 3.5 million acres, of which probably not more than  $2\frac{1}{2}$  million acres could advantageously be used for crops. The expanding livestock industry of the region needs more and better grazing, and this limits the feasibility of cultivating "plowable" pasture. Furthermore, it is doubtful whether much plowable grazing land would be suitable for growing oil crops and other essential war commodities. In addition to taking up the slack in idle cropland and bringing about better handling of pastures and of crop production, shifts from less essential to more essential crops present the greatest possibilities for expanding production to meet war needs. The relatively small acreages of plowable grazing lands that are devoted to racehorse breeding and the operations of "gentlemen farmers" might well be devoted to crops. These estates usually occupy the best limestone and valley lands, suited to the use of machinery.

<sup>1/</sup> See Chart 1: Major Subregions, Appalachian Region.



Table 1.- Appalachian Region: Land use by States, 1939 <sup>1/</sup>

State	Land in farms					Percent- age of land area
	Total	Cropland <sup>2/</sup>	Pasture <sup>3/</sup>	Forest	Idle <sup>4/</sup>	
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	
Total	82,986	23,454	26,415	28,660	4,457	66.4
West Virginia	8,909	1,590	4,087	2,994	238	57.8
Virginia	16,445	3,903	4,913	6,762	867	64.4
North Carolina	18,845	6,194	2,560	9,093	998	59.9
Tennessee	18,493	6,362	5,662	5,219	1,250	68.9
Kentucky	20,294	5,405	9,193	4,592	1,104	79.1

<sup>1/</sup> Census of Agriculture, 1940.<sup>2/</sup> All land used for crops in 1939.<sup>3/</sup> Plowable and "all other land," which includes nonplowable pasture.<sup>4/</sup> Idle and fallow cropland.

#### Size of Farms

The farm land of the region is divided into small units. The average size farm, according to the 1940 Census, had at that time 79 acres, as contrasted with an average of 174 acres for the Nation. Approximately half of all farms are under 50 acres, whereas 74 percent include less than 100 acres (table 2).<sup>2/</sup> The number of small farms was expanded greatly during the decade following 1930, partly because many young people found no way of building a home and gaining a livelihood, except by acquiring a small tract of land. Many of these units are part-time farms and rural residences; some have been vacated recently.

Most farms in the five States of this region have always been small. They were developed when hand labor was the main source of power. Small acreages on the hillsides are tilled by the shovel plow and the hoe. The character of the land, and the difficulties in developing machinery for tobacco, cotton, and vegetable culture, have not encouraged the growth of larger farm units.

In many places small farms occupy land that is of relatively low quality. This is particularly true in West Virginia, Kentucky, and in the mountain portions of the other three States. In fact, many of the small units now occupied by families that are underemployed are on land that is not suitable for any type of farming. This misuse of land and the resulting inefficiency with which labor is employed create numerous problems of health, welfare, and wasted resources.

<sup>2/</sup> It should be noted that census data on size of farm and incomes are affected by the inclusion in the category "farms" of tobacco and cotton cropper units which are in reality parts of larger farm units. For this reason size of farms in the region is not strictly comparable with size of farms in the United States. Moreover, what is said with respect to the prevalence of small farms, many on land of poor quality, should not be taken as indicating that the writers of this report overlook the fact that in the Appalachian Region are to be found some of the most fertile agricultural areas in the United States and some of the most efficiently operated farms. It should also be noted that, despite widespread underemployment in the region, there are also at certain seasons of the year, areas of labor shortage.



Table 2. - Appalachian Region: Number of farms by size, States, 1940 1/

Size Group	Region	W.Va.	Va.	N.C.	Tenn.	Ky.
Total	1,052,954	99,282	174,885	278,276	247,617	252,894
Under 10 acres	118,308	13,354	22,291	24,912	26,688	31,063
10 - 29 "	240,229	17,601	37,894	73,532	60,950	50,252
30 - 49 "	162,703	13,578	23,254	53,285	38,786	33,800
50 - 69 "	134,363	12,872	19,031	39,335	31,020	32,105
70 - 99 "	127,731	12,442	19,008	32,398	30,290	33,593
100-139 "	116,048	11,900	19,774	25,801	26,083	32,490
140-179 "	57,682	6,061	10,563	11,836	13,320	15,902
180 acres and over	95,890	11,474	23,070	17,177	20,480	23,689

1/ Census of Agriculture, 1940.

#### Farm Income

The average value per farm in 1939 of products sold, traded, or used by farm households in the Appalachian Region was \$772, or 59 percent of the comparable average for the United States (\$1309). Forty-two percent of the classified farms in the region had less than \$400 gross value of products, as compared with 32 percent of the farms in the United States as a whole.

Approximately 44 percent of the gross income from agriculture in this region is represented by crop sales, especially of tobacco, cotton, peanuts, and vegetables, and 26 percent from the sale of livestock and livestock products. A large part of the farm land is covered with forest, but less than 1 percent of the total income came from this source. In the low-income areas, returns from sale of forest products are small.

Wide variations in sources of income occur within States and between States. For example, farmers in West Virginia derive a much smaller proportion of gross income from crop sales than do those in the other four States. In the same State, farm family perquisites, excluding housing, represent 44 percent of all farm income as compared with 28 percent for the entire region. This emphasis upon production for home use raises questions as to the effectiveness with which labor is being used. Under present conditions of manpower shortage, employable workers should be able to contribute to the Nation's production to a much greater extent than is indicated by the figures in table 3.

Table 3. - Appalachian Region: Agricultural income, by States, 1939 1/

Income Source	Region	W. Va.	Va.	N. C.	Tenn.	Ky.
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
Total	798,650	54,315	150,912	262,439	156,492	174,492
Livestock	106,142	11,433	21,593	7,441	26,820	38,855
Livestock products	104,400	11,863	30,996	18,323	21,793	21,425
Crops	355,155	6,355	53,402	171,029	57,285	67,084
Forest products	7,793	770	2,383	2,300	1,443	897
Perquisites 2/	225,160	23,894	42,538	63,346	49,151	46,231

1/ Census of Agriculture, 1940.

2/ Food perquisites only - housing, forest products, and other items are not included.



# Underemployment in the Region

In 1940 the Appalachian Region had 18.9 percent of the farm population of the United States, but it received only 8.6 percent of the income from farm products sold or traded in the United States in 1939 (table 4). The pressure of population upon rural resources is indicated by the fact that nearly one-fifth of the country's farm population - living in the Appalachian Region - had at its disposal only 6.9 percent of the country's cropland and 5 percent of its pastureland. Moreover, more than 40 percent of the total population in this region is on farms, compared with 23 percent for the Nation. Obviously, here a relatively large number of people are producing a relatively small volume of farm products. With greater land resources and better equipment some of the available manpower could undoubtedly be much more productive. Under war conditions, resources and equipment are undermanned in many parts of the country. It is possible that some of the relatively unproductive farmers in the Appalachian Region could obtain more effective employment in other agricultural areas or in industry.

Table 4.- Appalachian agriculture relative to agriculture in the United States <sup>1/</sup>

	Total for region	Percentage of United States
Land in farms	82,985,962	7.8
Cropland	23,454,018	6.9
Pasture	26,413,536	5.0
Number of farms	1,052,954	17.3
Farm population	5,701,155	18.9
Total population	13,912,838	10.6
Agricultural income <sup>2/</sup>	573,489,247	8.6

<sup>1/</sup> Census of Agriculture, 1940.

<sup>2/</sup> Farm products sold or traded in 1939.

In terms of the basis that has been accepted for determining the essentiality of farm workers, it is estimated that 41 percent of the farms in the region fall into the group with less than eight war-production units (table 5). The percentages range from 26 percent in North Carolina to 57 percent in West Virginia. A survey in Southeastern Kentucky indicated that 80 percent of the families from which records were taken had less than eight war units.

Such data do not provide a direct measure of the degree of underemployment of labor but they do indicate a relatively low level of farm-labor productivity.

Table 5.- Appalachian Region: Percentage distribution of farms by war unit classes, States, 1939 <sup>1/</sup>

War unit class	Appalachian Region	Va.	W. Va.	N. C.	Ky.	Tenn.
	Percent	Percent	Percent	Percent	Percent	Percent
All classes	100	100	100	100	100	100
Under 8	41	43	57	26	53	41
8 - 11	19	19	19	19	16	22
12 - 15	13	12	10	16	11	12
16 - 23	13	11	6	19	9	13
24 - 31	5	4	2	7	3	5
32 and over	9	11	6	13	8	7

<sup>1/</sup> Based on war-unit conversion factors in Selective Service Local Board Memorandum No. 164, as amended January 16, 1943, and on the 1940 Census number of farms (adjusted for part-time or residence units), distribution of farms by value of products, and data on acreage and livestock numbers by commodities or classes. Of the 1,053,000 Census number of farms, including sharecropper units, 183,000 marginal units with part-time or retired operators have been excluded from the above distribution.



It was stated earlier that in this region approximately half of all farms are less than 50 acres in size. It should be added that the larger and more productive farms are a smaller proportion of the total than in the United States as a whole. The region has proportionately more farms than has the United States in each of the value-of-products groups under \$1,500 and fewer in each group with \$1,500 or more gross value of products. More than 60 percent of all farms have a gross farm income of less than \$600 (table 6). Of the farms in this group, 47 percent have less than 10 acres of cropland. Not all these small, low-income farms are mountain homesteads. They are scattered throughout the region on land of varying quality; they produce vegetables, cotton, tobacco, peanuts, livestock, and numerous other commodities.

Table 6.- Appalachian Region: Number and size of farms and acreage of cropland harvested by value-of-products groups 1/

Value of products sold, traded, or used at home	Number of farms	Acreage all land per farm	Acreage cropland harvested per farm	Percentage of farms reporting 1 - 9 acres of cropland harvested
All farms	1,052,954	78.8	22.8	31.8
Unclassified farms	5,210	55.6	12.8	41.1
Classified farms	1,047,744	78.9	22.8	31.8
\$ 0 - 249	269,978	41.1	8.0	61.4
250 - 399	186,328	50.9	12.8	46.7
400 - 599	180,493	70.2	18.7	26.3
600 - 999	194,104	88.4	25.7	12.7
1000 - 2499	175,710	121.4	38.7	4.0
2500 - over	41,131	266.8	89.4	2.3

1/ Census of Agriculture, 1940.

Of the farms reporting value of products sold, traded, or used at home in 1939, 204,724, or 19.8 percent, reported the operator working off the farm 100 days or more during 1939 (table 7), compared with 15.5 percent of the operators in the country as a whole. Such off-farm work was not confined to operators with a low value of products or to low-income farmers. However, of the 636,799 farms reporting a value of products sold, traded, or used at home of less than \$600, 169,983, or 27 percent, had operators who reported 100 days or more of nonfarm work in the previous year. Of the farms operated by such persons, a large proportion must be considered part-time farms, contributing relatively little produce to market.

Since 1939, as industrial jobs have become available to rural people, less attention is being given to many small farms. Workers on such farms, already employed part time off the farm, are working longer hours at their nonfarm employments; others are taking nonfarm work for the first time. In many parts of the region are extensive industrial developments, based on the subsurface resources and other natural advantages and the previous abundant supply of labor. In West Virginia, 34.8 percent of all farm operators worked off the farm 100 days or more during 1939 (chart 2). Numerous counties in all five States report part-time work for as many as 30 percent of all farm operators.

In terms of the current rural-farm labor force, another large group of farmers may be considered immobile and unavailable for fuller employment although a large proportion of the number are in the low-income class. These are the 154,406 farmers who are 65 years old or older - a group that includes 14.9 percent of all classified farm operators in the region. No immediate adjustment appears to be feasible in the case of farms occupied by such persons but possibly some might be combined for more efficient production.



Table 7.-- Appalachian Region: Operators working off-farm and aged operators in relation to value of products <sup>1/</sup>

Value of products sold, traded, or used at home	: Operators : :reporting 100: :days or more : :off-farm work: : 2/	: Operators : : 65 years old : : and over : : 2/	: Operators under : : 65 and those working : : off-farm less than : : 100 days 3/
	: <u>Number</u>	: <u>Number</u>	: <u>Number</u>
All farms	: 205,966	: 154,406	: 570,343
Unclassified farms	: 1,242	: 523	: 1,239
Classified farms	: 204,724	: 153,883	: 568,584
\$ 0 - 249	: 90,081	: 49,211	: 99,207
250 - 399	: 48,523	: 30,040	: 91,736
400 - 599	: 31,379	: 26,538	: 105,741
600 - 999	: 19,957	: 24,874	: 125,091
1,000 - 2,499	: 12,161	: 19,367	: 118,075
2,500 - over	: 2,623	: 3,853	: 28,734

<sup>1/</sup> Census of Agriculture, 1940.

<sup>2/</sup> In addition there were 77,793 operators who did not report the amount of time employed in off-farm work and 44,446 who did not report age.

<sup>3/</sup> Except for the fact that the number not reporting whether they worked off the farm or not overlaps the number not reporting age.

### Three Area Studies

Three recent surveys have thrown some light on developments since the Census of Agriculture for 1940. Separate reports are being or have been prepared for each survey. <sup>3/</sup>

The areas in which these studies were carried on were as follows:

- (1) Eastern Kentucky (represented by one magisterial district in each of 5 counties);
  - (2) Northeastern part of Davidson County, North Carolina;
  - (3) Southwestern part of Braxton County, West Virginia.
- Data pertinent to this report are now drawn from these three surveys and presented here in brief form.

Kentucky.-- Five magisterial districts in an equal number of sample counties were chosen to represent 33 Eastern Kentucky counties in order (1) to ascertain the changes in the rural-farm population since April 1, 1940, (2) to learn the extent to which workers on farms in this part of the State are productively employed as indicated by size of business, income, and volume of products sold, (3) to ascertain the 1942 and probable 1943 agricultural production on farms in Eastern Kentucky, (4) to appraise the possibility for combining vacated with occupied farms, (5) to estimate the manpower on farms in Eastern Kentucky that might contribute more to the war by working elsewhere, and (6) to analyze the characteristics of this manpower.

The survey, carried out in November and December 1942, indicated that 80 percent of the 359 farm families, in the area from which records were taken, had less than 8 and averaged not more than 3.5 war units in 1942, that 12 percent had between 8 and 11.9 war units and averaged 9.5; and that the remaining 8 percent, having over 12 war units, averaged about

<sup>3/</sup> Larson, Olaf F. and Downing, James C., Manpower for War Work--Eastern Kentucky, BAE, U. S. Department of Agriculture, May 1943.

Derr, David E. and Greene, R.E.L., Manpower Utilization in Relation to Agricultural Resources, Davidson County, N.C., BAE, and North Carolina Station cooperating. (Unpublished.)

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14.1.4/ A standard of 16 war units has been established by the Selective Service as a national objective which it is desired every able-bodied man engaged in agricultural production should equal or exceed. Production for home use in Eastern Kentucky requires on the average about 3 war units per family. Thus the extremely low level of production of at least four-fifths of the farm families in the area is apparent. Only 8 of the 359 interviewed families scored as high as 16 war units, in 1942.

Data obtained from the families concerning farm plans for 1943 indicate that 1943 production per farm will not be significantly different.

For this analysis of Eastern Kentucky manpower, family heads were divided into three groups: (1) Those not available for war work away from their farms because of handicaps, principally age; (2) those already employed in war jobs although still living on farms; (3) those available for employment in farm work outside the area or in industry - either within the area or outside. Family heads classed as available will contribute little more than their customary farm output in 1943 if they remain in their present locations. Perhaps their contributions could be materially increased through working in agriculture outside the area, or in industry either within or outside the area.

For the most part, as of December 1, 1942, available persons were associated with family groups, and would be more likely to move to industrial work, or to agricultural work outside the area, as families than as individuals.

Another indication of the scale of farm production in this area is that the families with less than 8 war units - representing 80 percent of all - received on the average only \$109 for farm products sold. Of this amount only \$41 was net cash farm income. Most of the farm operating expense was for purchased feeds and seed.

Sources of cash income other than the sale of farm products averaged \$380 per family for the entire group surveyed. This average is misleading, however, for a large proportion of the families surveyed had little more to live on than the net cash farm income. Families with heads who are considered employable for war work, in fact, received on the average less than \$100 from outside sources in 1942. Most of the outside income received by the 359 families was concentrated among the 203 families whose heads were not considered available as defined above. About one-half of the family heads not available already had war jobs in their present locations, such as coal mining, and thereby earned from \$500 to \$2,500 annually. Most of this outside income was from work by the operator away from his own farm, very little of which was done on other farms.

The 28,000 families with heads classified as available for more productive employment in the 33 counties represented about 42 percent of all farm families in the area as of December 1, 1942. These families could contribute more to the war, and could improve their level of living by working at industrial jobs within the area, if available, or by moving to work outside, than they could be trying to raise more on their own farms. This applies particularly to families with available heads in the group that has less than 8 war units; it does not apply to those families which are doing farm work of sufficient size to include 12 or more war units in 1943. These were considered as fully employed in essential war work; however there are only a few of them. It is believed that families having between 8 and 12 war units could contribute more to the war and improve their financial situation by getting work that would use their labor more effectively.

Data from representative farms in the group with less than 8 war units indicate that families with available heads averaged the equivalent of 1.9 adult workers for farm work. As families with less than 8 war units averaged

4/ War units as defined in Selective Service System Local Board Release No. 175, Jan. 16, 1943.



3.5 war units and had a labor force equivalent to 1.9 adult male workers, each adult equivalent worker was responsible for less than 2 war units in 1942. The number of workers available for industry in this group of families averaged 1.7 adults or their equivalent.

Even the few farm workers who may be fully employed may not be productively employed. To use 100 to 160 man hours of labor to produce 15 or 20 bushels of hillside corn certainly cannot be considered an effective arrangement. On the bottomlands, corn can be produced with about 80 hours of labor per acre, but relatively small acreages of bottomland are available.

To withdraw from agriculture here those families having heads who are regarded, in this study, as available for other work would not significantly reduce the quantity of food produced for sale in Eastern Kentucky. It is estimated that if all such families in the group with less than 8 war units were to cease farming in the area, the State's annual production of butterfat sold as cream would diminish less than 1 percent, that beef sales would decrease not more than 3 percent, and that poultry sales would decrease less than 6 percent. If only one-half such families were to leave, and if the meager farm-combination possibilities were taken advantage of, the production of each of these 3 commodities would be diminished by less than 1 percent.

In this area there is some slight opportunity for farms vacated through departure of families to be combined with other farms in such a way that total production for sale, on the combined basis, would exceed slightly the total for the farms when operated separately. The increase would be possible because less food and feed would be required for subsistence.

There has been a large movement of people from Eastern Kentucky since 1940. But it is estimated that as of December 1, 1942, in 33 Eastern Kentucky counties there were still at least 63,000 rural farm men and women, 15 to 59 years old, who were potentially available for jobs that would contribute more toward victory than do their present activities. This estimate includes 28,000 men who are heads of families, 19,000 other men, and 16,000 women other than wives and heads of families. A high estimate of 98,000 available workers adds female heads, and housewives with no children under 10 years old, and some children 15 years of age who normally are in school part of the year.

It is estimated that 8,000 of the 28,000 available family heads have no property ties or have families of fewer than 5 persons. These family heads and their families could move most easily. Nine thousand of the 28,000 available heads have property ties that would involve making some adjustments before leaving.

Many heads of families have already gone to nonfarm jobs at wages higher than those usually paid or likely to be paid for wage hands on farms. So a preference for nonfarm work may be found among many who might otherwise have been recruited as year-round farm hands. Many persons are likely to be available for seasonal work outside the area.

West Virginia. - An area in Braxton County was chosen as representative of subsistence farming in West Virginia. Data regarding production and employment were obtained from 102 families. The major purpose was to ascertain the degree of underemployment and the feasibility of adjustment.

The 102 farms were grouped into five classes as follows: (1) Units having gross farm sales of \$1,000 or more in 1942, on the assumption that this volume of production is indicative of full or nearly full employment; (2) units with less than \$1,000 gross farm receipts in 1942, but receiving earned nonfarm income of at least \$600, assuming that this minimum represents full employment; (3) units not falling in (1) or (2) but having operators more than 59 years old, on the assumption that persons of this age are immobile and incapable of fuller employment; (4) units with operators under 59 years of age and not falling in (1) or (2) - these are assumed to be underemployed and therefore available for full employment, and (5) units having no male labor or otherwise not falling in the preceding categories.



Only 11 of the 102 units had gross farm sales of \$1,000 or more (table 8). Twenty-seven operators qualified as part-time farmers, fully employed. Twenty-six were underemployed on the basis of earnings, but were more than 59 years old. Thirty-two of the 102 family heads were regarded as "under-employed" and, on that ground at least, as available for other work, but one of these was physically disabled.

In terms of war-production units, no farms qualified as having 16 units, and not more than 10 percent had 8 units or more. The variation in production units between Group 1 and the other groups was not so striking as might be expected because beef cattle, which dominated the production programs of larger farms, carried much less weight in the computation of war units than did the dairy or dual-purpose cows on small farms. In terms of war production units, however, not more than 11 percent of the farm operators can be said to be fully employed on farms.

During 1942, 45 males and 14 female members of the 102 families had left for nonfarm work or to enter the armed services.

Among the members of the 31 families whose heads were available for full-time employment there was an additional labor force, consisting of 15 male and 10 female children over 14 years of age who were available for work elsewhere. Fourteen of the 31 family heads expressed an interest in moving to a better farm or to nonfarm work. Thirteen expressed no interest in changing their status, although there seemed to be no serious obstacle to doing so. Four had definite plans for getting full-time work at an early date.

Table 8.- Braxton County, West Virginia: Characteristics of 102 rural family units

Farm Group	Number of farms	Cropland per farm	War Units per farm	Farm income	Nonfarm income	Average age operators
Group 1	11	32	9.9	\$1,356	304	57
Group 2	27	8	2.6	133	\$1,310	43
Group 3	26	12	4.0	138	36	69
Group 4	32	14	3.3	158	241	44
Group 5	6	15	3.0	193	---	--
Average		14	4.1	280	474	51

North Carolina. - In two adjacent communities in the northeastern part of Davidson County - an area believed to be reasonably typical of the agriculture of the Piedmont - records were taken on 56 farms. The purpose was to get data on (1) available production facilities, (2) production in 1942 and that planned for 1943, (3) the availability of labor in 1942 and the current labor situation.

On these farms the average acreage of cropland was 48 per farm (table 9). The average number of war units per farm was 18.9. Farm production includes corn, small grains, hay, and a few livestock, mainly for home consumption; the cash crops were tobacco, vegetables, and an occasional patch of cotton.

Table 9.- Davidson County, North Carolina: Characteristics of 56 farms

War unit class	Number of farms	Crop-land 1942	Average Number of war units	War units per man-equivalent	Farm receipts	Nonfarm income
		acres			dollars	dollars
Less than 12	18	23	9.8	7.7	650	179
12 - 19	16	44	16.4	9.1	1,318	218
20 and over	22	70	28.3	10.1	2,776	32
Average		48	18.9	9.4	1,676	132



War units per man-equivalent (including women and children) averaged 9.4 for all farms, and 7.7 for the group of smallest farms. Gross farm receipts averaged \$1,676 per farm, with an average of \$650 for the 18 farms scoring less than 12 war units.

Off-farm work claimed 27 percent of the time of the operators of the 56 farms from which records were taken. Farmers on farms that scored less than 12 war-production units were employed at nonfarm work a total of 40 percent of the time during 1942.

In this Piedmont area of North Carolina, under present conditions of farm and nonfarm employment, there is no labor surplus on the farms. In fact, the maintenance of production during 1943 is dependent to a large degree on retaining the present farm-labor supply. Proximity to industrial work has resulted in a migration of most young men to it. On the other hand few farm laborers are hired in this area. Seasonal requirements are met by trading labor, and by "after hours" assistance on the part of members of the families who have industrial jobs. Occasionally a wage hand may be hired for 2 or 3 days.

#### Conclusions from the Area Studies

Certain conclusions from the spot studies in West Virginia and Kentucky bear directly upon the feasibility of consolidating some of the small farms of the Appalachian Region, as proposed later in this report. They are as follows:

(1) Much of the land which might be vacated in any program involving a considerable reduction in the number of farms of the region is not suited for agricultural use.

(2) Lands occupied and owned by aged people probably will not be available for consolidation into larger farm units during the emergency.

(3) The location of vacated farms with respect to each other and to farms remaining occupied will determine in large measure the possibilities of farm combinations. The rugged topography of much land in low-income areas will prevent consolidation of many of the smaller farms.

(4) Farm combination would entail the liquidation of heirships, of tax delinquency, and of the real assets of persons who might vacate.

(5) Although manpower would be released by a program of consolidation, little would be gained in production by increasing the size of many small subsistence units by 50 or even 100 percent because of the poor quality of the land and the limited uses to which it is adapted. It would probably be necessary to combine 4 to 6 such units to obtain an operating unit large enough to employ effectively a full-time worker.

To achieve the adjustments in land use and farm organization indicated, direction and financial assistance from Federal and State agencies would probably be needed. The last decade demonstrated the difficulties in making such adjustments during a period of depression; now that several kinds of work are open to the people, such changes could be brought about more readily, provided encouragement and direction were supplied.



## MANPOWER RESOURCES: PATTERNS OF USE

The farm population of the Appalachian States, because of continued high rate of natural increase, has long constituted a source of manpower for other parts of the United States. The rate of migration from this region has naturally varied with general economic conditions. The out-movement has proceeded at a diminished rate during depression years and at an accelerated rate during economic recovery. Internal population pressures and external economic or social conditions have operated to stimulate or depress the normal redistribution of population in relation to economic resources and opportunities.

Historically, this process has repeated itself in all parts of the country and during various stages of the Nation's development. Wartime demands for manpower in the armed forces and in war or essential civilian industries not only accelerate the normal population shifts but may compel readjustments that are aimed at maximum utilization of manpower. Some of these adjustments involving population shifts may be only for the duration of the war, while others may prove to be economically beneficial and thus be relatively permanent.

Rapid expansions of industry and of the armed forces during the last 3 years have caused population shifts and changes in the employment status of the farm population in the Appalachian Region as elsewhere.

### Changes in the Rural-Farm Population, 1940-43

The defense era and the impact of war itself have brought tremendous changes in the distribution of the population of the United States. Movement toward defense centers and other nonfarm areas and entry into the armed forces have entailed heavy losses from the farm population. This has been true in all regions. But the farm population of the Appalachian Region has sustained a slightly higher-than-average rate of loss since 1940, probably because of the accumulation of excess population there during the 1930's, when movement from farm to city was slower than in the previous decade.

<u>Estimated changes in rural-farm population April 1, 1940- April 1, 1943 <sup>1/</sup></u>	<u>Appalachian Region</u>	<u>United States</u>
Decrease in rural-farm population		
Number (thousands)	518	2,646
Percent	9.1	8.8
Decrease through total migration from the rural- farm population		
Number (thousands)	779	3,870
Percent	13.7	12.8
Civilian migration		
Number (thousands)	562	2,704
Percent	9.9	8.9
Entrance into armed forces		
Number (thousands)	217	1,166
Percent	3.8	3.9

<sup>1/</sup> For detailed estimates see table 10.



From April 1940 to April 1943 there was an estimated net migration from the farm population in the Appalachian Region of nearly 800,000 persons (table 10). Slightly more than 200,000 are estimated to have gone into the armed forces, and an additional 560,000 have migrated to nonfarm areas within and outside the Appalachian Region. Natural increase has partly offset the losses through migration so that the decrease in farm population was only about 500,000 persons. Although the Appalachian Region included only 18.9 percent of the Nation's farm population in 1940, it is estimated that 20.1 percent of the country's total net migration from farms in the 3 years preceding April 1943 came from this region, reflecting the slightly higher rate of civilian migration. Relative to the farm population of the Appalachian Region, migration losses occasioned through inductions and enlistments into the armed forces were no greater than from the farm population in other regions.

As the figures on migration include persons of all ages - and many nonworkers - the losses through migration do not represent a corresponding loss of actual or even potential workers. When allowance is made for children under 14 and other persons who, for various reasons, are not likely to become employed, it is estimated that the total net migration of about 800,000 included only 500,000 actual or potential farm workers. In addition, many persons living on farms in the region have gotten nonfarm work though they continue to live on farms. For the 3-year period preceding April 1943, it is estimated that shifts to nonfarm jobs of persons continuing to live on farms resulted in a net loss from the on-farm labor supply of about 350,000 actual or potential farm workers. <sup>5/</sup> Altogether, the 3-year contribution to industry and the armed forces from the farms of the region was nearly 850,000 actual or potential farm workers, including those who shifted into nonfarm jobs without moving from the farms.

Net migration from farms during the 3 years 1940-42 has varied among the several States of the Appalachian Region. The heaviest rate of out-migration from farms occurred in Kentucky and North Carolina, with Tennessee next in order, Virginia next, and West Virginia last. About 40 percent of this migration loss occurred in 1942, the first year that the United States was in the war. The States fall in a somewhat different order when ranked according to migration rates for the year 1942 - North Carolina, Kentucky, Virginia, West Virginia, and Tennessee. Excess of births over deaths in the farm population only partially offset migration losses, so that net decreases occurred in the farm population of the Appalachian States, ranging from about 5 percent in West Virginia to nearly 12 percent in Kentucky for the period January 1, 1940 to January 1, 1943 (table 11).

Undoubtedly rates of migration from the farm population have varied considerably among areas within each State, but no data are available for the separate areas on numbers of persons who have migrated from the farm population. <sup>6/</sup> Some indication of the relative rates of gross losses of farm workers is available for these States and for most of the physiographic areas within the States from a special survey made in the fall of 1942. These data are limited to the departures of family and year-round hired farm workers (as distinguished from population) to industrial work and to the armed forces either through migration or through shifting into nonfarm jobs without actually moving from the farm.

During the 12-month period September 1941 to September 1942 the gross loss rate per farm of regular workers going to industry and to the armed forces was highest in North Carolina and lowest in West Virginia (table 12).

<sup>5/</sup> That the farm population provided an important source of labor for the expanding industrial employment in the area is suggested by the fact that over one-fifth of the total nonfarm employment in the Appalachian Region was made up of farm residents, compared with less than one-tenth in the United States as a whole.

<sup>6/</sup> Chart 3: Areas Within States, Appalachian Region.



Indexes in table 12, which are expressed with the regional loss rate per farm as a base, indicate that the per farm loss rate in North Carolina was 8 percent, and in Virginia 6 percent, greater than the regional average, but that in West Virginia the per farm loss rate was 19 percent smaller than the regional average. Within each State the rates showed pronounced differences. Location of defense industries and previously established patterns of mobility or immobility have been important factors causing differences in losses by migration.

Variations in local nonfarm employment opportunities also affect the extent of losses of farm workers who get work in industry but do not leave the farms. On the basis of trends in nonagricultural employment in the several Appalachian States, apparently the rate of loss of farm workers who continue living on farms but take nonfarm jobs may have been highest in Virginia and Tennessee and least in Kentucky and West Virginia. Because of these differences the ranking of the States with respect to gross loss rates of regular farm workers to industry and to the armed forces differs somewhat from the ranking given above with respect to migration rates. For instance, Virginia, which was third highest in the rate of migration from farms during 1942, had the second highest rate in gross loss of farm workers. This was due to losses, in addition to migrations, which came about through occupational shifts that involved no migration.

The movement of farm persons to nonfarm areas, together with redistribution of nonfarm population, has resulted in gains and losses in total population in the different areas of the Appalachian Region (chart 4). In numerous cases, areas which have had a net increase in population during recent years have had decreases in farm population, due to movement to urban industrial areas. The data on total population changes, based on registrations for War Ration Book 1 in May 1942, indicate that between April 1940 and May 1942 the total civilian population decreased in all of the Appalachian States except Virginia and Tennessee, with the region as a whole showing a slight increase. It is estimated that there was a net civilian outmigration from the Appalachian Region to other States of 231,000 persons between April 1940 and May 1942 <sup>7/</sup>, which was more than offset by natural increase.

#### Changes in Employment Status of Rural-Farm Persons, 1940-43

Although the farm population of the region lost around 780,000 persons (including about a half-million actual or potential workers) through civilian and military migration in the 3 years preceding April 1943, nevertheless 200,000 more farm residents (14 years of age and over) were employed in agricultural and nonagricultural occupations in the spring of 1943 than 3 years earlier (table 13). The number of employed rural-farm males remained at about the same level, all of the increase being due to the entrance of women into employment. In April 1940 only 4.9 percent of all farm residents 14 years of age and over in the Appalachian Region reported as employed in agriculture were women but the proportion had increased to 13.5 percent by April 1943. Similarly the percentage that women comprise of rural-farm residents employed in nonfarm work increased from 26.5 percent in April 1940 to 29.5 percent in April 1943. The number of farm residents 14 years of age and over engaged in nonfarm occupations increased by 360,000, whereas the number in farm work decreased by 160,000, (although total farm employment did not decrease quite so much because of some increase in the number of children at work on farms and in the number of persons working in agriculture on a part-time basis). The number of males over 14 years old estimated as unemployed or "not in the labor force" (that is, not at work and not seeking work) had decreased to almost the minimum of those physically unfit or too old for work, constituting only 7.7 percent of all farm males 14 years of age and over. This contrasts sharply with the situation in April 1940 when nearly 22 percent of all rural-farm males of working age were either unemployed or not in the labor force.

<sup>7/</sup> Henry S. Shryock, Jr., "Internal Migration and the War," Journal of the American Statistical Association, 31 (March 1943), pp. 16-30.



Although no current estimates are available by States with respect to the employment status of the farm population or of the reserves of those "not in labor force," the States of the region undoubtedly show variations in these matters. Variations that existed as of the Census date are indicated in table 16, which shows that unemployment of rural-farm males varied from less than 5 percent in North Carolina to 18 percent in West Virginia, while farm males not in the labor force comprised less than 6 percent of all farm males 14 years of age and over in West Virginia, 12 percent in North Carolina and 17 percent in Tennessee and Virginia. Other variations may be noted with respect to the relative preponderance of males in the employed groups in the several States and areas within States.

#### Composition of Farm Employment

The total number of persons working on farms in the region is estimated to have been 1.9 million on October 1, 1939 and 1.6 million on April 1, 1940; 1.5 million of the October number and 1.3 million in April were rural-farm persons 14 years of age and over and employed primarily in agriculture (table 17). The remaining 400,000 on October 1 and 300,000 on April 1, consisted of nonfarm residents employed in agriculture, farm workers under 14 years of age, and persons who worked on farms at least 2 days a week, although they were primarily engaged in nonfarm work. State and subregional variations in the composition of farm employment at the time of the last census are shown in tables 18 and 19. Variations in the percentages of total farm employment that were made up of females, nonfarm persons, and part-time farm workers are given in table 20.

In October 1942 and in April 1943, the total farm employment of the Appalachian Region is estimated to have been about 100,000 short of the numbers 3 years earlier. The estimated percentage decrease in the 3-year period is about 6 percent for the Appalachian Region on both October and April dates, as compared with about 3 percent decreases for the United States as a whole. In part, the decrease reflects a reduction in the number of underemployed farm workers, many having found more satisfactory employment in industry; in part, a continuation of the downward trend in farm employment in evidence in this area since 1935; and in part the relatively small increase in the region's farm production in 1942, as compared with the country as a whole.

More marked are the changes in composition of farm employment that have taken place since the census date. The nature of the changes are similar to those that have occurred throughout the country, that is, a decrease in rural-farm males with partially offsetting increases in women and children. During the 3 years preceding April 1, 1943, in the Appalachian Region, there was a net decrease of approximately 250,000 in the number of rural-farm males 14 years of age and over engaged primarily in farm work. This decrease of nearly 20 percent may be compared with a decrease of 15 percent for the United States as a whole. In both cases, an unduly large proportion of the net decrease in adult males engaged in farm work occurred among those of military age, since this age group not only filled the quotas for the armed forces, but also was more than proportionately represented in the heavy movement into industry. In addition to the net decrease in rural-farm males employed in farm work, there was also a small decrease of approximately 5 percent in the number of nonfarm residents (of both sexes) employed in farm work. Over half of these net decreases in farm employment were replaced by an increase of nearly 100,000 in the number of rural-farm women working on farms, an increase of about 50,000 in the number of persons under 14, and a small increase of about 15,000 in the number of part-time farm workers who were primarily engaged in some nonfarm occupation.



Between October 1, 1939 and October 1, 1942 the net changes in the number of workers in the several categories of farm workers were in the same direction as for the April dates given above. Thus the relatively large volume of agricultural production in 1942 was achieved with a working force made up of considerably fewer young men and considerably more women, children, and older men than in prewar years.

For the year 1943, projections have been made of the changes in numbers and employment status of farm population and of the levels and composition of total farm employment for the Appalachian Region. These projections assume a continuation of losses from the on-farm labor supply, although at a lower rate than in 1942. They also assume a continuation in the replacing by women, youths, and children of the younger men lost to farm employment sufficient to maintain a level of employment during 1943 substantially equal to that in corresponding months of 1942.

The projections of agricultural employment for 1943 suffer from the limitation inherent in farm-employment data for any area, whether relating to a census year, to a recent date, or even to future dates. Almost any male 14 years of age and over, living on a farm, who is not engaged in nonfarm work, and who is physically able to work, will find enough to do on the farm to be reported as a farm worker. This flexibility and elasticity in the nature of farm employment limit the usefulness of any unemployment counts of farm residents for there can be a considerable degree of underemployment among those who are "employed." In fact, the typical manifestation among rural-farm persons is not complete lack of work, but an amount too small to keep them productively and regularly at work on a full-time basis. Thus, for example, the 1940 Census revealed only 3 percent of the farm population of the United States to be unemployed, as compared with 8 percent of the nonfarm population. Similarly, the proportion of unemployed in the nonfarm population of the Appalachian Region was about twice as large as in the farm population. Unemployment is thus more easily discernible and measurable among persons in nonfarm occupations than among those engaged in agriculture.

In recent years, before the impact of war, unemployed people comprised a ready source of labor, to be drawn upon as needed. Under war conditions, these reserves have virtually been eliminated. Manpower is now being drawn from the great reservoir of persons normally not in the labor force - men, women, and younger persons (primarily the latter two groups) who in ordinary times neither work gainfully nor seek work. The fact that during the last year or two, farm employment national and regional, has been maintained substantially at previous levels - and this despite a tremendous outmovement of farm persons - is due to the fact that many farm workers who left agriculture were previously underemployed. Their limited participation was readily replaced by other members of the family.

#### Labor Requirements and the Labor Force

On the assumption that production goals for 1943 will be attained, labor requirements were computed for crop and livestock production in each of the 45 resource areas of the Appalachian Region. Totals for the resource areas were then combined in each State to obtain the total labor needed during 1943, assuming the attainment of production goals.

Labor-requirement estimates were computed by areas on the basis of available information concerning the man-hours of labor needed in the performance of each of the crop and livestock operations during each month of the year. Man-hour labor requirements per acre or per animal were converted to man-equivalents in terms of the performance of an able-bodied adult male worker. Conversion of man-hours to man-equivalents was made on the basis of estimated hours per month available for farm work in each month of the year, after allowing for Sundays, inclement weather,



etc. The estimated labor requirements thus represent a reasonably efficient utilization of time, such as is commonly found on well-managed farms in these States. They do not represent maximum utilization of labor time of the available working force, since in estimating labor requirements no assumptions were made with respect to farm consolidations, basic changes in farm organization involving shifts in crop or livestock enterprises to level off seasonal peaks, or with respect to any marked changes from the prevailing conditions of labor mobility, exchange of labor, etc.

Available information on probable farm-employment levels in each of the Appalachian States and major sub-areas during 1943 has been utilized in comparing the labor-requirement estimates with the working force expected for each month of the year. The estimated employment figures were converted to man-equivalents by making allowances for the probable composition of the 1943 working force, taking into account the relative physical capacity and amount of time spent in farm work by women, children, and the other categories of workers (table 17).

#### Underemployment

A condition of "underemployment" of persons engaged in agriculture, or any other occupation, can be stated to exist only when the time devoted by a worker to his job is substantially less than that generally considered as a full-time and reasonably efficient standard in that particular occupation. Underemployment in this sense and ineffective employment, involving low productivity per worker, are generally associated. Both arise from similar conditions. Both represent a waste of manpower. It is with underemployment, however, that we are concerned in this discussion.

Appraisal of a condition of underemployment involves comparison with a standard of full employment. In most types of farm work, full-time employment involves fewer work days during the year than in some nonagricultural industries, where operations do not depend upon the weather and where the timing of operations is not dictated by the processes of natural growth. Moreover, full-time employment in the Appalachian Region is not the same as full-time employment in the Wheat Belt. In each region the standard can be determined only after making allowance for interruptions due to weather and for the distribution of work during the year in accordance with the physical resources and the types of product and of farming enterprise in the region. By comparison with such a reasonable standard of full-time employment in the Appalachian Region the extent of underemployment in that region has been estimated.

A comparison of labor requirements with the anticipated labor force indicates the probability of a considerable amount of underemployment in this region in 1943. For the region as a whole, it is estimated that the labor requirements of the 1943 farm production goals can be met with an average annual employment corresponding to 821,000 able-bodied adult males (table 21). The probable average annual employment for the region is estimated to be the equivalent of 1,300,000 such workers, or about 475,000 in excess of the number needed, on the basis of the assumed efficient use of labor. Seasonally, this surplus of manpower is estimated to vary from 250,000 man-equivalents in October to somewhat over 600,000 in months like January and February.

The projected 1943 farm-employment estimates exceed the labor requirements for each State in every month of the year (table 22). The volume of excess manpower that would result from more efficient use of the working force varies in the different States. Thus in North Carolina, for example, the estimated monthly average excess of employment over



requirements is the equivalent of 168,000 adult males; in West Virginia, 42,000. In both of these States the average requirements comprise only about 60 percent of the average employment, in terms of adult males. There is a seasonal variation in North Carolina which ranges from a surplus of 47,000 in October to 248,000 in January.

In the different physiographic areas of each State there is great variation in the extent of underemployment. The State figures are the result of surpluses in some areas, an apparent balance between needs and supply of labor in other areas and a deficit of workers in a few areas in some months.

Because the data on farm employment and on labor requirements for the areas within each State are less satisfactory than the data for the State and the region, the estimates in table 24 of the volume by which employment exceeds requirements in the areas can serve only as rough indications of relative differences between areas in the volume of underemployment, and not as precise statements of the number of persons who may be released through fuller employment of the available working force. From this table one may surmise, for example, that in Kentucky, during the fall peak, underemployed farm workers are likely to be concentrated in Area 1, which includes the 33 Eastern Kentucky counties, and during spring months in Areas 1, 2, and 4. On the other hand, in Kentucky Areas 3 and 6 the projected spring and fall farm employment estimates do not exceed requirements. In each of the other States also there are areas in which expected employment during 1943 may represent reasonably full utilization of farm workers, whereas in other areas the probability of considerable underemployment is apparent.

Supplementary indications of area and county differences in agricultural underemployment are provided in chart 5, based on data from the 1940 Census of Agriculture. Rough estimates have been made, on what seems a conservative basis, of the number and percentage of farm families in each county which, because of low productive output and associated underemployment, might be considered as a potential labor supply. From the number of farms in each county reporting a gross farm income of less than \$600 in 1939 was subtracted the number of farms with operators working 100 days or more off the farm, the number with operators aged 65 or over, and the number operated by sharecroppers. The remainder - which somewhat understates the number of farms with gross farm income under \$600 not operated by a person 65 years of age or over, not operated by a person who worked off the farm as much as 100 days in 1939, and not operated by a sharecropper - was divided by 2 to form an estimate of the number of farm families comprising a potential labor supply as of April 1, 1943. Variations in the percentage such farm families comprise of all farm (operator) families are shown in chart 5 (Agricultural Underemployment, 1940) for the counties of the Appalachian Region. The greatest concentration of such farm families is in Area 1 of Eastern Kentucky, where several counties have more than 30 percent of all farm operators' families included. Most of the mountainous counties in West Virginia, Tennessee, and North Carolina, as well, have at least 20 percent of their farm families so classified. For the region as a whole, the average is 14.7 percent, or roughly 155,000 farm families. These families, of course, include actual or potential workers other than the farm operator.

Another measure derived from the Census also indicates the particular areas within the region in which one might expect to find the greatest available supply of labor. Chart 6 (Replacement Rates of Rural-Farm Men of Working Age, 1940-50) shows, by counties, the replacement rate of rural-farm males aged 25 to 70 (assumed age range of farm operators) which would occur between 1940 and 1950 if there were no migration out of the farm population. For the region as a whole, there would be 200 rural-farm men reaching the age of 25 for every 100 jobs made available



to young men by the death or retirement of older men. This would mean approximately 300,000 farm youths available in excess of full replacement needs. In some counties of the region, especially in the mining areas of West Virginia and Kentucky and in the Coastal Plains of North Carolina, the replacement rate is more than 250, reaching as high as 300 in a few counties. <sup>8/</sup> As the analysis of farm employment and requirements in the region suggests that many of the underemployed rural-farm men who will retire or die during the decade will not need to be replaced, probably many more than 300,000 young farm men just reaching maturity would need to leave the farms of the region during the decade.

#### Possibilities of Better Utilization of the Underemployed

The data already presented point to a very considerable amount of underemployment in the agricultural working force of the Appalachian Region. Assuming that, in 1943, total farm employment in the region remains approximately the same as or slightly lower than in 1942 - an assumption which is in line with indications so far this year - the labor requirements of probable 1943 production may leave unutilized nearly 7,000,000 man-months, or the equivalent of the year-round employment of about 475,000 adult male workers. In terms of the probable composition of the 1943 farm working force this would mean approximately 585,000 workers of all categories, of whom nearly 400,000 might be rural-farm males of working age employed primarily in agriculture.

The above estimates of manpower are based upon the number expected to be employed in 1943, and not upon the total population able to work. There are considerable reserves of farm women and children who ordinarily do not work at farm or nonfarm jobs even during peak periods, as their work is of such brief duration as not to be reflected in the Bureau of Agricultural Economics farm employment estimates. <sup>9/</sup> For the region as a whole it is estimated that in 1943, during the months of greatest employment, approximately 1.3 million females 14 years of age and over, will be living on farms, who will not be in the labor force (table 13). There are also reserves of the same kind in rural-nonfarm areas and in the smaller towns accessible to farms. Many of these persons, of course, would not be available for farm work but others could be drawn upon to meet seasonal labor needs to a greater extent than they have been.

The existence of so great a volume of underemployment carries a number of implications. Some of the underemployment might be absorbed if the volume of farm production in the region were substantially expanded. But productive land resources limit within a fairly narrow range the possibilities of expanding total acreages of crop and pasture-land. Some further shifts from less essential to more essential war crops seem possible, and some of these shifts, such as that to vegetables and potatoes, may absorb more labor than the crops replaced. A substantial expansion in the aggregate volume of farm production in the region can be achieved, during a short period only, by increasing yields through the use of more lime and fertilizer and better cultural practices. This kind of expansion is not likely to call for a much larger input of labor than at present. Widespread opportunity for farm work can be found only outside the region.

<sup>8/</sup> A limitation to this measure as an index of location of labor reserve is that it tends to be greater in areas that have exported most males in the recent past, for not so many young men are needed to replace those left, while some areas of cumulative population pressure, as in the Blue Ridge, have their reserve underestimated by this indication.

<sup>9/</sup> The estimates, prepared monthly, are based upon the number of persons reported to be working on farms 2 or more days during the reporting week.



Another way of reducing underemployment would be for available workers to obtain nonfarm work, either within the region or outside it. The extent to which manpower could be released for work elsewhere would depend, among other things, upon the measures taken to provide for the seasonal labor needs of the Appalachian area, especially during the autumn months. In terms of the 1943 labor requirements, and assuming full utilization of workers, the farm work could be performed with about 500,000 fewer workers during every month of the year, except during the fall peak. During the fall, the work could be done with about 325,000 fewer workers than are likely to be in farm employment, assuming no additional demands upon the existing labor reserves on the farms or in nearby nonfarm areas. If these reserves are drawn upon to a greater extent than previously, perhaps 125,000 more workers might be released who otherwise would be needed to help meet seasonal labor peaks. Thus a total of 450,000 workers might be released.

The most important consideration affecting the number and kind of workers available for other farm or nonfarm employment is the number of operators required to man the present number of farms in the region and the problems involved in reducing the number of low production farms in a short time. Closely associated with this is the necessity of obtaining from the reduced number of farms the volume of production indicated by 1943 farm production goals. Much of the underemployment in the region stems from the fact that nearly every farm unit is operated by an adult male worker, and that many of these do not fill in periods of slack employment with work elsewhere. Underemployment of this character must persist as long as the present number of farms is maintained. The number of workers, particularly of adult males, that might be released, depends largely on the degree of reduction in the present number of operating units that is considered desirable and on the speed with which the reduction is undertaken. How much can be accomplished in time to aid in the war will depend upon the aggressiveness with which the problem is attacked.

Within the limitations set for this report little can be said about the many complex problems involved in a program of agricultural reorganization for the region. Removal of about 450,000 farm workers, including about 300,000 rural-farm men engaged primarily in agriculture, would leave behind about 700,000 rural-farm men of this class. Such a reduction in the adult male working force would require a considerable reduction in the number of farms. Since April 1940, when the Census enumerated approximately 1,050,000 farms in the region, a drop in the number of farms has taken place, through abandonment, through amalgamation with other farms, or through the operator's assuming full-time nonfarm work, his farm becoming merely a place to live. Most of these reductions have occurred among the small farms, especially among those with fewer than 8 war units per farm.

For the release of 450,000 workers, a total decrease of about 300,000 farms below the 1940 number would be required. Some retirement of land from cultivation would probably be found necessary, especially in the case of the lowest-income farms operated by persons under 65 years of age who have little or no supplementary nonfarm work. The loss in production occasioned by the withdrawal from operation of these poorest farms would be small and could more than be offset through improved practices on the remaining farms, and through increased production on the more productive farms of the Nation, made possible by a contribution of manpower from the Appalachian Region. Further reduction in number of farms would have to be achieved through consolidation of farms which now provide less than full-time employment for an adult male worker. Besides this, there would have to be much fuller utilization of manpower on the remaining farms. Productive efficiency would have to be increased to an extent which might require a reorganization of the farm plant so that



perhaps 310,000 farms would attain a level of production equivalent to 16 or more war units, and 255,000 farms would approximate the 8 to 16 war unit level. The only farms of less than 8 war units would be those operated on a part-time or retirement basis. There would be about 185,000 of these, approximately the present number, including 105,000 now operated by persons primarily employed in nonfarm work and 80,000 operated by persons over 65 years of age. Such reorganization would leave in the region approximately 750,000 farms, manned by a working force having 300,000 fewer rural-farm men than at present.

An alternative approach to the problem of the degree of reorganization in farm plant necessary to make available about 300,000 adult male farm workers from the region's farm population is suggested by the following changes. Assuming a reduction of 60 percent in the 540,000 farms in the region which in 1939 were at a production level equivalent to less than 8 war units, and a reduction of 25 percent in the 164,000 farms at the 8 to 11 war unit level, about 700,000 farms would be left in the region. It is estimated that this number would require approximately 715,000 rural-farm male workers employed primarily in agriculture plus the present numbers of part-time farmers and of nonfarm males working in agriculture. As there are at present approximately 1,010,000 rural-farm males employed primarily in agriculture, vigorous measures to mobilize the underemployed manpower of the region might permit the transfer of about 300,000 adult male workers.



Table 10. Appalachian Region: Estimated effects of migration and occupational shifts on the supply of actual or potential farm workers living on farms, cumulative from April 1, 1940 to specified dates

Losses - cumulative since April 1, 1940 to:	(Thousands of persons)					
	1942		1943			
	Jan. 1:	April 1:	July 1:	Oct. 1:	Jan. 1:	April 1:
	1942	1943	1943	1943	1943	1944
Net migration from rural-farm population	460	492	536	613	756	779
Entrance into armed forces <sup>1/</sup>	53	76	113	156	189	217
Net civilian migration - all ages	407	416	423	461	567	562
Persons under 14	96	98	100	109	134	133
Persons 14 years old and over	311	318	323	352	433	429
Actual or potential workers	205	209	213	232	285	283
Others	106	109	110	120	148	146
Net withdrawals from on-farm labor supply through shifts into other occupations without change of residence <sup>2/</sup>	376	329	263	286	405	345
Total losses to on-farm labor supply of actual or potential workers <sup>3/</sup>	634	614	589	670	879	845
(sum of: (1) losses to armed forces, (2) actual or potential workers in civilian migration; and (3) net withdrawals from shifts in occupation)						

<sup>1/</sup>Unofficial. Inductions up to 1943 were assumed to be proportional to men in the military age group in the rural-farm population except for a minor adjustment for relative incidence of disqualifying characteristics. Enlistments from rural-farm population estimated on basis of available information regarding relative rates of enlistments from farm and nonfarm persons. Beginning with 1943 (and to some extent in the last quarter of 1942), downward adjustments from a proportional contribution were made to allow for possible effects of the Selective Service regulations.

<sup>2/</sup>Increase in employment of farm residents in nonfarm occupations less the increase in such persons who continue to work in agriculture a minor part of the work-week.

<sup>3/</sup>Sum of: (1) losses to armed forces; (2) actual or potential workers in civilian migration; and (3) net withdrawals from shifts into other occupations without change of residence. Normal increases in the working age population living on farms have not been deducted from the estimated total losses. These losses do not relate to any changes in the supply of potential farm workers not living on farms.



Table 11. Appalachian States: Estimated rural-farm population on January 1 dates, 1940-1944

State	(Thousands of persons)				
	1940	1941	1942	1943	1944 (projected)
Appalachian region	5,662	5,593	5,398	5,185	5,106
Virginia	978	965	943	905	891
West Virginia	529	528	520	502	495
North Carolina	1,647	1,630	1,583	1,511	1,484
Kentucky	1,247	1,224	1,151	1,100	1,081
Tennessee	1,261	1,246	1,201	1,167	1,155



Table 12. Appalachian Region, States, and areas: Index of gross losses of regular farm workers 1/ to industry and the armed forces, September 1941 to September 1942 2/

State and area	Index
Appalachian Region	100
Virginia	106
Area 1	-
Area 2	155
Area 3	127
Area 4	98
Area 5	90
Area 6	60
Area 7	95
West Virginia	81
Area 1	329
Area 2	64
Area 3	118
Area 4	78
North Carolina	108
Area 1	-
Area 2	121
Area 3	91
Area 4	93
Kentucky	99
Area 1	110
Area 2	84
Area 3	131
Area 4	83
Area 5	110
Area 6	-
Tennessee	96
Area 1	-
Area 2	103
Area 3	42
Area 4	94
Area 5	102

1/ Includes all family workers and year-round hired workers.

2/ Based on data obtained in a nation-wide survey made by the Department of Agriculture in September 1942 which included 1,189 farms in the Appalachian Region.

Table 13. Appalachian Region: Estimated rural-farm population by employment status and sex, April 1940 and quarterly dates January 1942 - January 1944 <sup>1/</sup>

(Thousands of persons)

Employment status	1942				1943				1944			
	April 1	January 1	April 1	July 1	October 1	January 1	April 1	July 1	October 1	January 1	April 1	July 1
Total rural-farm population	5,701	5,398	5,386	5,363	5,307	5,185	5,183	5,184	5,168	5,106		
Persons 14 years old and over	3,864	3,652	3,644	3,623	3,577	3,481	3,478	3,479	3,473	3,435		
Not in labor force and unemployed <sup>2/</sup>	2,115	1,778	1,677	1,493	1,498	1,593	1,520	1,373	1,436	1,566		
Employed persons	1,749	1,874	1,967	2,130	2,079	1,888	1,958	2,106	2,037	1,869		
Employed in farm work <sup>3/</sup>	1,319	1,094	1,197	1,390	1,319	1,063	1,168	1,356	1,267	1,039		
Employed in nonfarm occupations	430	780	770	740	760	825	790	750	770	830		
Males (all ages)	2,944	2,760	2,742	2,711	2,662	2,582	2,566	2,553	2,537	2,499		
Persons 14 years old and over	2,008	1,870	1,854	1,824	1,781	1,713	1,697	1,685	1,674	1,648		
Not in labor force and unemployed <sup>2/</sup>	437	253	197	116	153	159	130	110	160	154		
Employed persons	1,571	1,617	1,657	1,708	1,628	1,554	1,567	1,575	1,514	1,494		
Employed in farm work <sup>3/</sup>	1,255	1,027	1,081	1,152	1,068	965	1,010	1,051	976	935		
Employed in nonfarm occupations	316	590	576	556	560	589	557	524	538	559		
Females (all ages)	2,757	2,638	2,644	2,652	2,645	2,603	2,617	2,631	2,631	2,607		
Persons 14 years old and over	1,856	1,782	1,790	1,799	1,796	1,768	1,781	1,794	1,799	1,787		
Not in labor force and unemployed <sup>2/</sup>	1,678	1,525	1,480	1,377	1,345	1,434	1,390	1,263	1,276	1,412		
Employed persons	178	257	310	422	451	334	391	531	523	375		
Employed in farm work <sup>3/</sup>	64	67	116	238	251	98	158	305	291	104		
Employed in nonfarm occupations	114	190	194	184	200	236	233	226	232	271		

<sup>1/</sup> Figures for April 1940 are based on Census data with adjustments for comparability with data for subsequent dates; all other figures are estimates of the Bureau of Agricultural Economics as of March 1943.

<sup>2/</sup> Includes persons on public emergency work (WPA, etc.). Estimated number unemployed on April 1, 1940 is 191,000 persons, 154,000 males and 37,000 females.

<sup>3/</sup> Includes only farm residents 14 years of age and over engaged primarily in farm work; for total farm employment see Table 17.



Table 14. Appalachian Region and States: Estimated rural-farm population by employment status and sex, April 1, 1940 <sup>1/</sup>

Employment status	Region		Virginia		West		North		Kentucky		Tennessee	
	Number		Number		Number		Number		Number		Number	
Total rural-farm population (all ages)	5,701,155		963,359		631,452		1,656,501		1,257,899		1,271,944	
Persons 14 years old and over	3,864,092		680,888		361,518		1,090,201		853,238		878,247	
Not in labor force	1,923,764		343,035		163,999		516,305		440,840		459,584	
In labor force	1,940,328		337,853		197,519		573,896		412,398		418,663	
Employed in farm work	1,319,227		205,675		106,278		419,656		292,540		295,079	
Employed in nonfarm occupations	430,074		104,510		52,883		117,384		70,557		84,740	
Unemployed	191,027		27,668		38,358		36,856		49,301		38,844	
Males (all ages)	2,944,500		508,918		279,142		847,457		655,045		653,938	
Persons 14 years old and over	2,007,977		354,868		192,135		559,869		448,342		452,763	
Not in labor force	283,394		58,972		11,164		66,853		67,959		78,445	
In labor force	1,724,583		295,896		180,971		493,016		380,383		374,318	
Employed in farm work	1,255,056		197,795		102,913		385,184		286,425		282,740	
Employed in nonfarm occupations	315,674		77,240		43,506		81,942		52,946		60,040	
Unemployed	153,853		20,861		34,552		25,890		41,012		31,538	
Females (all ages)	2,756,655		474,441		252,310		809,044		602,854		618,006	
Persons 14 years old and over	1,856,115		326,020		169,383		530,332		404,896		425,484	
Not in labor force	1,640,370		284,063		152,835		449,452		372,881		381,139	
In labor force	215,745		41,957		16,548		80,880		32,015		44,345	
Employed in farm work	64,171		7,880		3,365		34,472		6,115		12,339	
Employed in nonfarm occupations	114,400		27,270		9,377		35,442		17,611		24,700	
Unemployed	37,174		6,807		3,806		10,966		8,289		7,306	

<sup>1/</sup> Based on Census data with adjustments for comparability with regional data for subsequent dates.

Table 15. Appalachian Region and major subregions: Estimated rural-farm population by employment status and sex, April 1, 1940 <sup>1/</sup>

Employment status	Region	Coastal : Plains	Piedmont	Southern : Appalachian :		Interior : Mississippi	
				Blue	Great Valley	Appalachian: Plateaus	Low : Plateaus : Uplands :
Total rural-farm population (all ages)	: 5,701,155	938,477	1,072,516	362,950	680,851	1,000,230	1,214,685 431,446
Persons 14 years old and over	: 3,864,092	616,128	731,182	242,042	468,402	645,695	855,356 305,287
Not in labor force	: 1,923,764	301,997	359,064	108,191	240,415	292,128	456,941 164,533
In labor force	: 1,940,328	314,131	372,118	133,851	227,987	353,567	398,415 140,754
Employed in farm work	: 1,319,227	244,282	248,940	79,168	137,938	201,223	298,596 109,575
Employed in nonfarm occupations	: 430,074	54,210	103,571	35,288	65,163	86,307	66,592 18,943
Unemployed	: 191,027	15,639	19,507	19,395	24,886	66,037	33,227 12,236
Males (all ages)	: 2,944,500	480,393	553,609	185,718	349,366	522,525	630,173 222,716
Persons 14 years old and over	: 2,007,977	317,397	379,919	123,806	241,004	340,917	446,522 158,412
Not in labor force	: 283,394	49,523	57,883	6,039	37,731	116,147	81,592 33,984
In labor force	: 1,724,583	267,874	322,036	117,767	203,273	224,770	364,930 124,428
Employed in farm work	: 1,255,056	219,467	236,225	75,781	134,096	194,586	292,691 102,705
Employed in nonfarm occupations	: 315,674	38,482	72,300	26,629	48,499	72,456	44,724 12,584
Unemployed	: 153,853	9,925	13,511	15,357	20,678	57,728	27,515 9,139
Females (all ages)	: 2,756,655	458,084	518,907	177,232	331,485	477,705	584,512 208,730
Persons 14 years old and over	: 1,856,115	298,731	351,263	118,236	227,398	304,778	408,834 146,875
Not in labor force	: 1,640,370	252,474	301,181	102,152	202,684	275,981	375,349 130,549
In labor force	: 215,745	46,257	50,082	16,084	24,714	28,797	33,485 16,326
Employed in farm work	: 64,171	24,815	12,715	3,387	3,842	6,637	5,905 6,870
Employed in nonfarm occupations	: 114,400	15,728	31,271	8,659	16,664	13,851	21,868 6,359
Unemployed	: 37,174	5,714	6,096	4,038	4,208	8,309	5,712 3,097

<sup>1/</sup> Based on Census data with adjustments for comparability with regional data for subsequent dates.



Table 16. Appalachian Region: Percentage males comprise of rural-farm labor force by industry or employment status, and percentage of rural-farm males outside of the labor force or unemployed, by States, areas, and major subregions, 1940 census dates

Area	Percent males comprise of				Percent of all males	
	persons 14 yrs. old and over				14 years old and over	
	In	Employed	Employed		Not in:	
	labor	in farm	in nonfarm		labor	
	force	work	work	Unemployed	force	Unemployed
Appalachian Region	88.9	95.1	73.4	80.5	14.1	7.7
Virginia	87.6	96.2	73.9	75.4	16.6	5.9
Area 1	80.8	86.7	72.5	60.1	24.7	3.7
Area 2	86.9	95.7	75.7	64.9	16.6	3.5
Area 3	86.3	96.8	68.6	78.6	14.4	5.6
Area 4	83.0	96.6	72.7	71.6	19.3	4.3
Area 5	87.1	97.4	72.1	80.6	12.8	7.4
Area 6	87.2	96.1	73.6	76.4	17.3	9.8
Area 7	89.8	97.0	78.8	81.4	12.0	10.1
West Virginia	91.6	96.8	82.3	90.1	5.8	18.0
Area 1	89.2	98.5	67.3	80.4	11.3	7.2
Area 2	90.0	96.7	75.9	87.3	15.1	16.2
Area 3	91.7	97.7	79.6	90.6	8.9	17.3
Area 4	-	-	86.5	90.5	-	19.9
North Carolina	85.9	91.8	69.8	70.3	11.9	4.6
Area 1	88.0	96.4	70.8	60.4	23.1	4.7
Area 2	84.8	88.4	67.1	63.9	13.9	2.8
Area 3	85.8	93.8	68.3	64.5	13.0	2.8
Area 4	88.0	95.7	75.3	78.9	2.4	12.6
Kentucky	92.2	97.9	75.0	83.2	15.2	9.2
Area 1	91.8	96.6	84.3	83.5	5.9	15.3
Area 2	91.0	98.4	65.4	79.3	23.7	4.1
Area 3	93.9	98.6	80.1	86.1	16.4	11.1
Area 4	93.3	98.6	67.6	83.1	16.8	6.3
Area 5	91.7	98.2	68.5	82.3	17.6	7.0
Area 6	92.3	99.2	67.8	83.2	23.0	6.3
Tennessee	89.4	95.8	70.9	81.2	17.3	7.0
Area 1	89.3	95.3	80.0	84.9	9.2	14.2
Area 2	89.8	97.4	75.2	83.9	16.6	7.7
Area 3	91.2	96.3	82.8	88.4	5.1	15.3
Area 4	90.1	97.2	65.1	82.6	16.1	6.0
Area 5	87.7	92.8	65.8	72.8	22.3	5.5
Coastal Plains	85.3	89.8	71.0	63.5	15.6	3.1
Piedmont	86.5	94.9	69.8	68.9	15.2	3.6
Southern Blue Ridge	88.0	95.7	75.5	79.2	4.9	12.4
Appalachian Great Valley	89.2	97.2	74.4	83.1	15.7	8.6
Appalachian Plateaus	63.6	96.7	84.0	87.4	34.1	16.9
Interior Low Plateaus	91.6	98.0	67.2	82.8	18.3	6.2
Mississippi Uplands	88.4	93.7	66.4	74.7	21.5	5.8

Table 17. Appalachian Region: Estimated composition of farm employment, 1940 Census and current quarterly

Classification	Census dates				1942				1943				1944			
	: October 1, : April 1, : : : :				: October 1, : April 1, : July 1 : : : :				: October 1 : January 1 : April 1 : : : :				: October 1 : January 1 : July 1 : : : :			
	: 1939	: 1940	: January 1	: April 1	: July 1	: October 1	: January 1	: April 1	: July 1	: October 1	: January 1	: April 1	: July 1	: October 1	: January 1	: July 1
Total farm employment 1/	1,891,000	1,593,000	1,323,000	1,512,000	1,864,000	1,779,000	1,320,000	1,500,000	1,850,000	1,750,000	1,300,000	1,551,550	1,850,000	1,750,000	1,300,000	1,551,550
Workers 14 years old and over	1,784,143	1,555,512	1,288,456	1,439,364	1,687,982	1,609,764	1,273,998	1,414,575	1,657,692	1,551,550	1,245,816	1,551,550	1,657,692	1,551,550	1,245,816	1,551,550
Living on farms & engaged primarily in farm work	1,484,807	1,319,227	1,093,737	1,196,915	1,389,556	1,318,790	1,063,485	1,168,365	1,356,382	1,266,528	1,038,986	1,266,528	1,356,382	1,266,528	1,038,986	1,266,528
Males	1,339,947	1,255,056	1,026,953	1,080,790	1,151,914	1,068,220	965,676	1,010,554	1,051,427	975,227	935,087	975,227	1,051,427	975,227	935,087	975,227
Females	94,860	64,171	66,784	116,125	237,642	250,570	97,809	157,811	304,955	291,301	103,899	291,301	304,955	291,301	103,899	291,301
Not living on farms but engaged primarily in farm work	108,041	91,061	75,623	86,426	106,546	101,688	75,451	85,740	105,746	100,030	74,308	100,030	105,746	100,030	74,308	100,030
Working on farms at least 2 days a week but engaged primarily in nonfarm work 2/	191,295	145,224	119,096	156,023	191,880	189,286	135,062	160,470	195,564	184,992	132,522	184,992	195,564	184,992	132,522	184,992
Workers under 14 years of age	106,857	37,488	34,544	72,636	176,018	169,236	46,002	85,425	192,308	198,450	54,184	198,450	192,308	198,450	54,184	198,450

1/ Persons working on farms the equivalent of 2 or more days a week.

2/ Estimated number of persons employed on farms for a lesser part of the work-week than in nonfarm occupations.



Table 18. Appalachian Region and States: Estimated composition of farm employment, 1940 Census dates

Classification	Appalachian Region : Virginia				West Virginia			
	: October		: April		: October		: April	
	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940
Total farm employment	1,891,000	1,593,000	296,000	262,000	148,000	133,000		
Workers 14 years old and over	1,784,143	1,555,512	287,713	258,857	146,475	132,415		
Living on farms and engaged primarily in farm work	1,484,807	1,319,227	222,972	205,675	114,281	106,278		
Males	1,389,947	1,255,056	213,478	197,795	110,308	102,913		
Females	94,860	64,171	9,494	7,880	3,973	3,365		
Not living on farms but engaged primarily in farm work:	108,041	91,061	24,084	21,541	6,682	5,816		
Working on farms at least 2 days a week but engaged primarily in nonfarm work	191,295	145,224	40,657	31,641	25,512	20,321		
Workers under 14 years of age	106,857	37,489	8,287	3,143	1,525	585		

Table 18. Appalachian Region and States: Estimated composition of farm employment, 1940 Census dates (continued)

Classification	North Carolina				Kentucky				Tennessee			
	: October		: April		: October		: April		: October		: April	
	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940	: 1939	: 1940
Total farm employment	641,000	498,000	376,000	348,000	430,000	352,000						
Workers 14 years old and over	585,621	479,523	361,639	342,294	402,695	342,424						
Living on farms and engaged primarily in farm work	503,003	419,565	303,567	292,540	340,984	295,079						
Males	448,444	385,184	296,855	286,425	320,862	282,740						
Females	54,559	34,472	6,712	6,115	20,122	12,339						
Not living on farms but engaged primarily in farm work:	31,250	24,235	23,487	21,310	22,538	18,159						
Working on farms at least 2 days a week but engaged primarily in nonfarm work	51,368	35,632	34,585	28,444	39,173	29,186						
Workers under 14 years of age	55,379	18,477	14,361	5,706	27,305	9,576						





Table 20. Appalachian Region: Extent of participation in farm employment of specified categories of workers, by States, areas and major subregions, 1940 Census, dates 1/

Area	Percent persons employed primarily in nonfarm work comprise of total farm 2/ employment		Percent females comprise of rural farm persons 14 yrs. of age & over employed primarily in farm work		Percent nonfarm residents comprise of persons 14 yrs. of age and over employed primarily in farm work
	Oct. 1, 1939	Apr. 1, 1940	Oct. 1, 1939	Apr. 1, 1940	April 1, 1940
Appalachian Region	10.1	9.1	6.4	4.9	6.5
Virginia	13.7	12.1	4.3	3.8	9.5
Area 1	8.3	7.3	13.9	13.3	30.2
Area 2	15.0	13.2	4.9	4.3	9.8
Area 3	13.2	11.6	3.8	3.2	12.4
Area 4	12.5	11.0	3.9	3.4	4.4
Area 5	15.7	13.8	3.1	2.6	11.8
Area 6	16.5	14.5	4.2	3.9	3.3
Area 7	15.0	13.2	3.3	3.0	9.1
West Virginia	17.2	15.3	3.5	3.2	5.2
Area 1	9.3	8.2	2.2	1.5	19.4
Area 2	14.4	12.6	3.8	3.3	5.3
Area 3	16.1	14.2	2.6	2.4	5.3
Area 4	20.1	17.7	4.5	4.1	3.9
North Carolina	8.0	7.2	10.9	8.2	5.5
Area 1	8.0	7.1	4.4	3.6	12.1
Area 2	3.9	3.4	15.3	11.6	6.0
Area 3	10.1	8.9	8.0	6.2	4.8
Area 4	14.9	13.1	5.1	4.3	4.0
Kentucky	9.2	8.2	2.2	2.1	6.8
Area 1	14.0	12.3	3.5	3.4	3.9
Area 2	7.0	6.1	1.9	1.6	13.6
Area 3	9.3	8.2	1.5	1.4	5.0
Area 4	6.3	5.6	1.6	1.5	4.9
Area 5	8.0	7.0	2.0	1.8	5.2
Area 6	7.4	6.5	.9	.8	8.7
Tennessee	9.1	8.3	5.9	4.2	5.8
Area 1	15.4	13.5	5.1	4.7	7.2
Area 2	13.0	11.5	2.9	2.6	5.6
Area 3	17.5	15.4	4.2	3.7	6.3
Area 4	8.5	7.5	3.1	2.8	5.1
Area 5	5.8	5.1	10.6	7.2	6.7
Coastal Plains	5.8	5.3	13.3	10.2	8.0
Piedmont	11.0	9.7	6.5	5.1	5.3
Southern Blue Ridge	15.1	13.3	5.0	4.3	4.2
Appalachian Great Valley	13.6	12.0	3.1	2.8	7.9
Appalachian Plateaus	16.4	14.4	3.5	3.3	4.4
Interior Low Plateaus	7.6	6.7	2.2	2.0	7.1
Mississippi Uplands	6.1	5.5	9.4	6.3	6.4

1/ Based on estimates presented in Tables 14 and 19.

2/ With farm work as a minor occupation.

Table 21. Appalachian Region: Estimated farm employment and labor requirements in man-equivalents, by months, 1943

(Thousands of man-equivalents)		
Month	Farm employment	Labor requirements
12 month average	1,297	821
January	1,105	493
February	1,130	509
March	1,181	640
April	1,282	847
May	1,449	1,038
June	1,537	1,055
July	1,475	888
August	1,424	842
September	1,391	987
October	1,283	1,022
November	1,201	879
December	1,103	649



Table 22. Appalachian Region and States: Estimated excess of farm employment over labor requirements, in man-equivalents, by months, 1943

Month	(Thousands of man-equivalents)				
	Region	Virginia	West Virginia	North Carolina	Tennessee
12-month average	476	94	42	168	106
January	612	89	28 ✓	248	143
February	621	97	32	239	161
March	541	101	33	209	120
April	435	98	33	198	42
May	411	100	39	193	27 ✓
June	482	115	40	178	90
July	587	129	49	175	146
August	582	110	58	165	153
September	404	84	50	108	117 ✓
October	261	60 ✓	49	47 ✓	80
November	322	67	54	81	89
December	454	80	40	176	108

100  
287

Table 23. Appalachian Region: Estimated excess man-equivalents in farm employment over labor requirements converted to persons 1/, by months, 1943

Month	(Thousands of persons)						
	Region	Virginia	West Virginia	North Carolina	Kentucky	Tennessee	
12-month average	583	113	52	207	80	131	
January	731	105	34	297	124	171	
February	751	115	39	290	112	195	
March	663	120	41	258	97	147	
April	538	117	41	248	80	52	
May	502	119	48	238	64	33	
June	579	136	49	215	71	108	
July	712	153	57	213	109	180	
August	708	132	69	203	115	189	
September	509	105	62	139	57	146	
October	341	78	64	63	32	104	
November	406	83	69	103	39	112	
December	558	97	50	218	61	132	

1/Conversion assumes excess has same composition as total farm employment. On this assumption, the average monthly excess for the region of about 585,000 consists of the following classes of farm workers; 400,000 rural-farm males 14 years of age and over with farm work as a primary occupation, 60,000 rural-farm women, 35,000 nonfarm residents (male and female), 60,000 persons employed primarily in nonfarm work but doing at least two days farm work a week, and 30,000 children under 14. In October, the month with the smallest excess the number of rural-farm males over 14 is reduced to about 190,000.



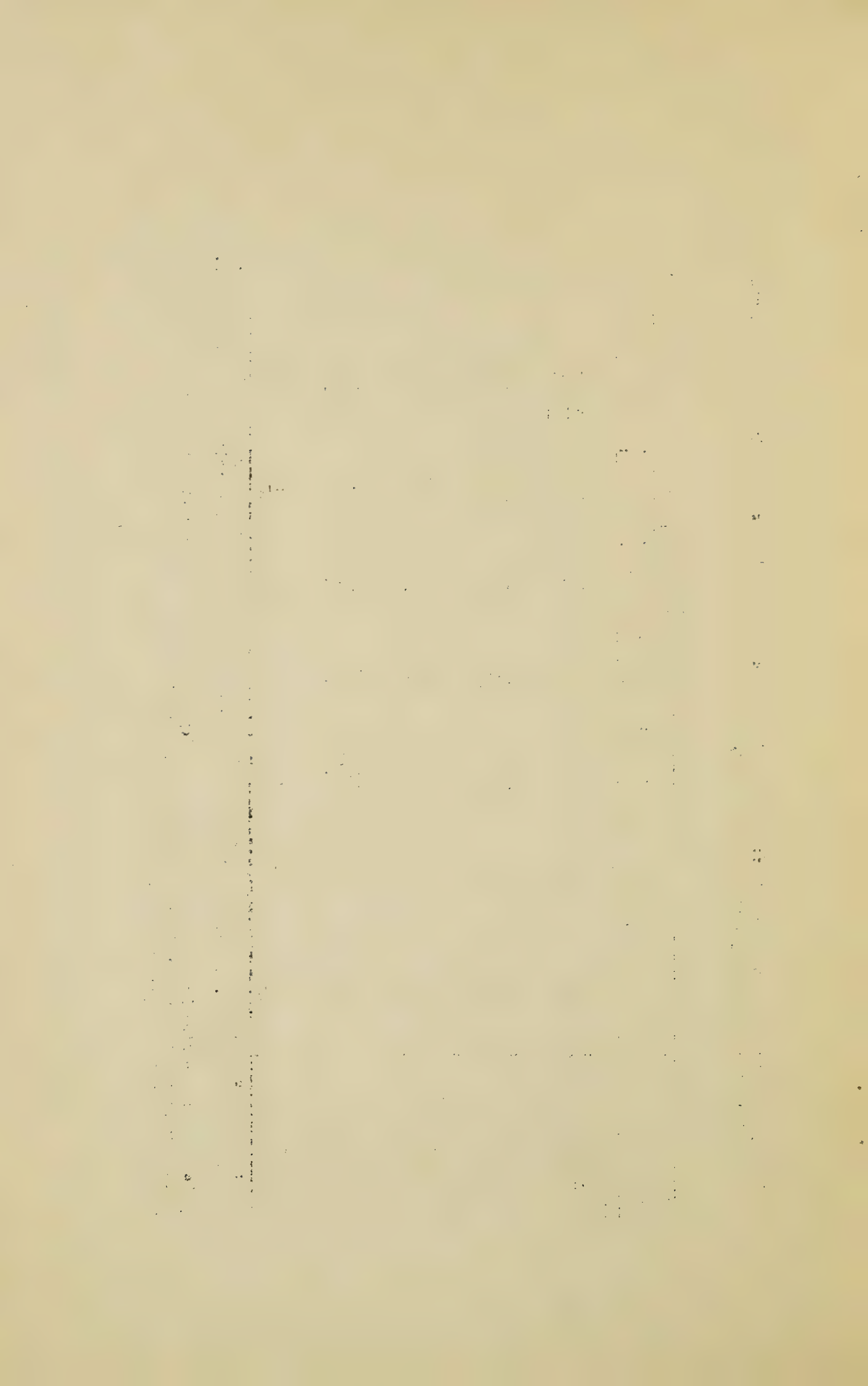
Table 24. Appalachian States and Areas: Estimated excess of farm employment over labor requirements in man-equivalents, April and September, 1943

		(Thousands of man-equivalents)												
States and month	State total	Areas within State												
		1	2	3	4	5	6							
Virginia														
April	98	1/4	16	12	33	13	2/27							
September	84		14	10	25	7	2/24							
West Virginia														
April	33	1/1	1/1*	21	21	XXX	XXX							
September	50			23	26	XXX	XXX							
North Carolina														
April	198	4	73	86	35	XXX	XXX							
September	108	3*	36	29*	40	XXX	XXX							
Kentucky														
April	64	29	17	1/1/	20	3*	1/1/							
September	45	41	1/1/	1/1/	1/1/	6	1/1/							
Tennessee														
April	42	4	27	7	22	1/	XXX							
September	117	4	31	9	35	38	XXX							

Note: Excess of employment over requirements is shown for areas only where the excess is 10 percent or more of the requirements, and excesses less than 20 percent of requirements are indicated by an asterisk

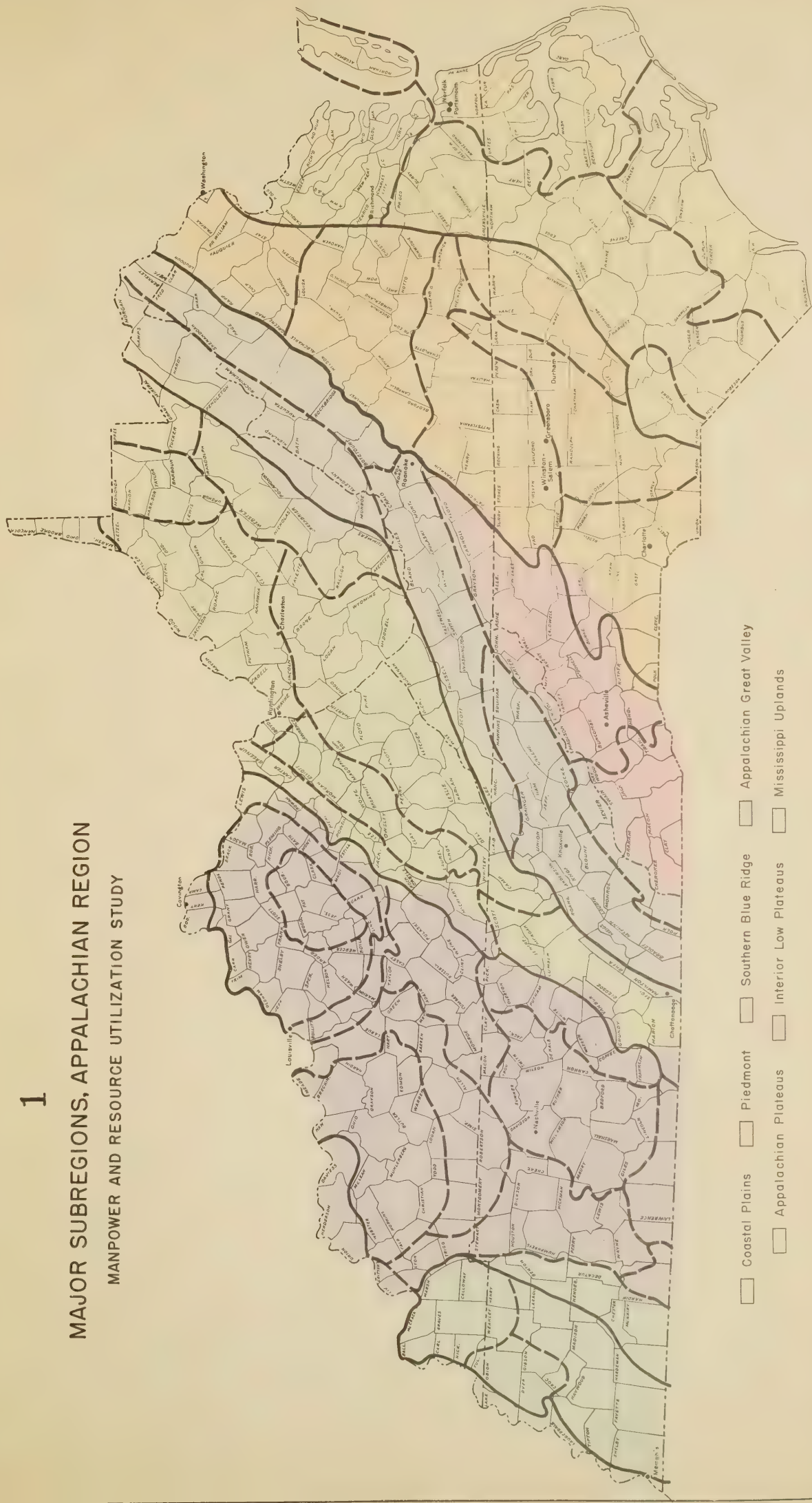
Note: Excess of employment over requirements is shown for areas only where the excess is 10 percent or more of the requirements, and excess is less than 20 percent of requirements are indicated by an asterisk.

1/ No apparent surplus in this month; estimated employment does not exceed requirements by as much as 10 percent and in some areas falls short of requirements.  
 2/ Indicated excess is for areas 6 and 7 combined.





MAJOR SUBREGIONS, APPALACHIAN REGION  
MANPOWER AND RESOURCE UTILIZATION STUDY

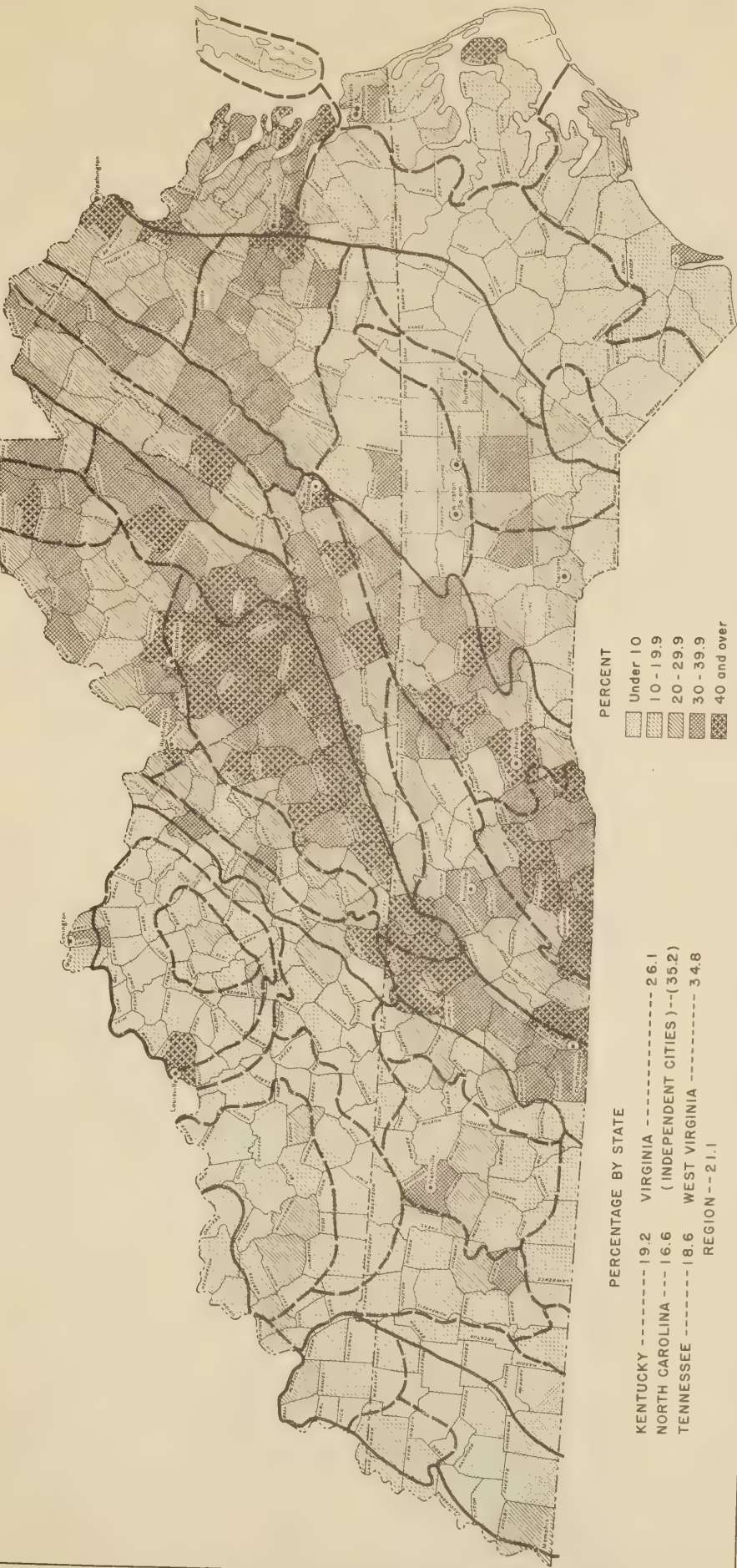


- Coastal Plains
- Piedmont
- Southern Blue Ridge
- Appalachian Great Valley
- Appalachian Plateaus
- Interior Low Plateaus
- Mississippi Uplands





# PERCENTAGE OF FARM OPERATORS WORKING 100 DAYS OR MORE OFF THEIR FARMS, 1939

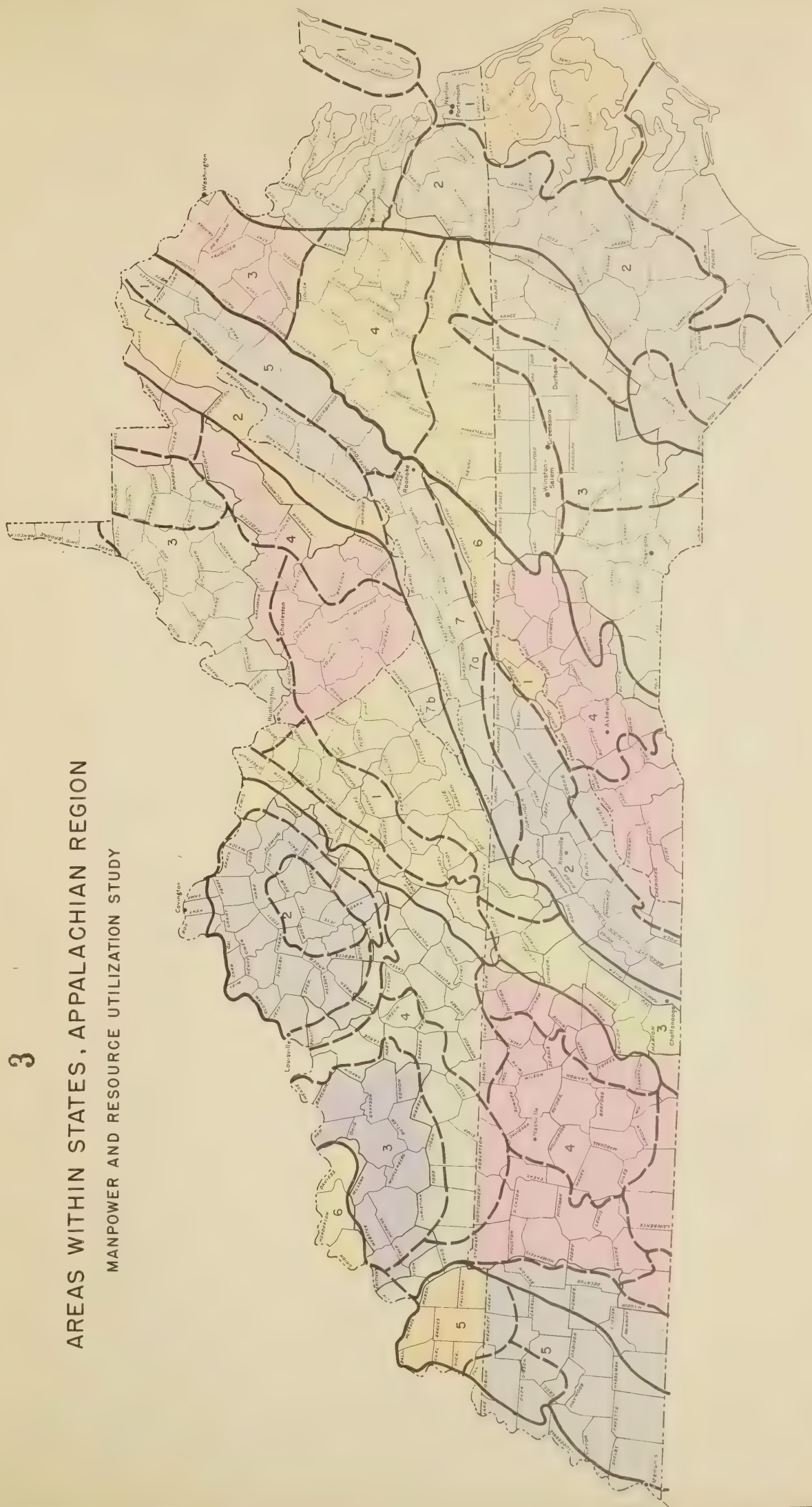


PERCENTAGE BY STATE		PERCENT
KENTUCKY	19.2	Under 10
NORTH CAROLINA	16.6	10 - 19.9
TENNESSEE	18.6	20 - 29.9
VIRGINIA	26.1	30 - 39.9
(INDEPENDENT CITIES)	(35.2)	40 and over
WEST VIRGINIA	34.8	
REGION	21.1	





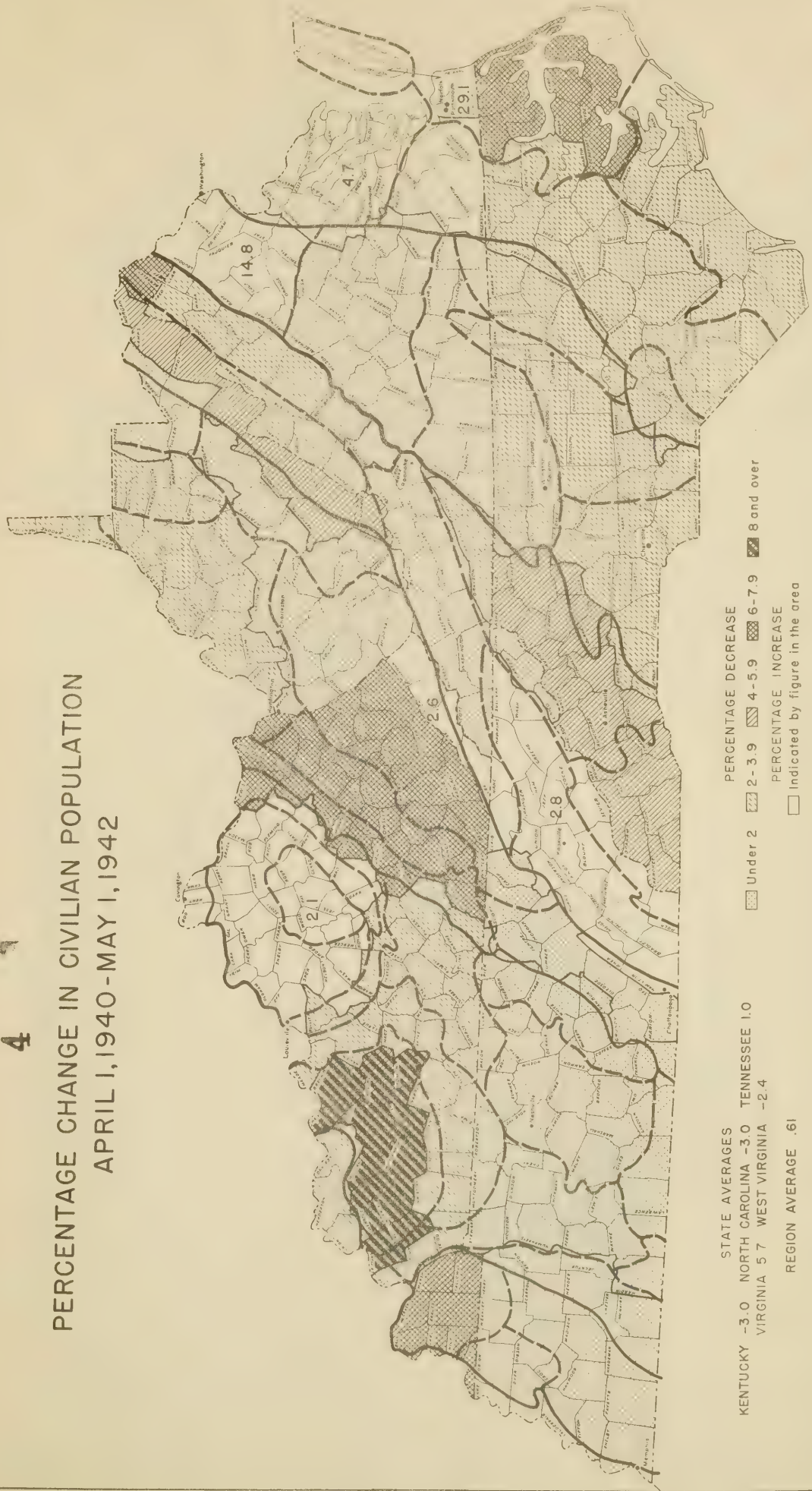
# AREAS WITHIN STATES, APPALACHIAN REGION MANPOWER AND RESOURCE UTILIZATION STUDY







# PERCENTAGE CHANGE IN CIVILIAN POPULATION APRIL 1, 1940-MAY 1, 1942

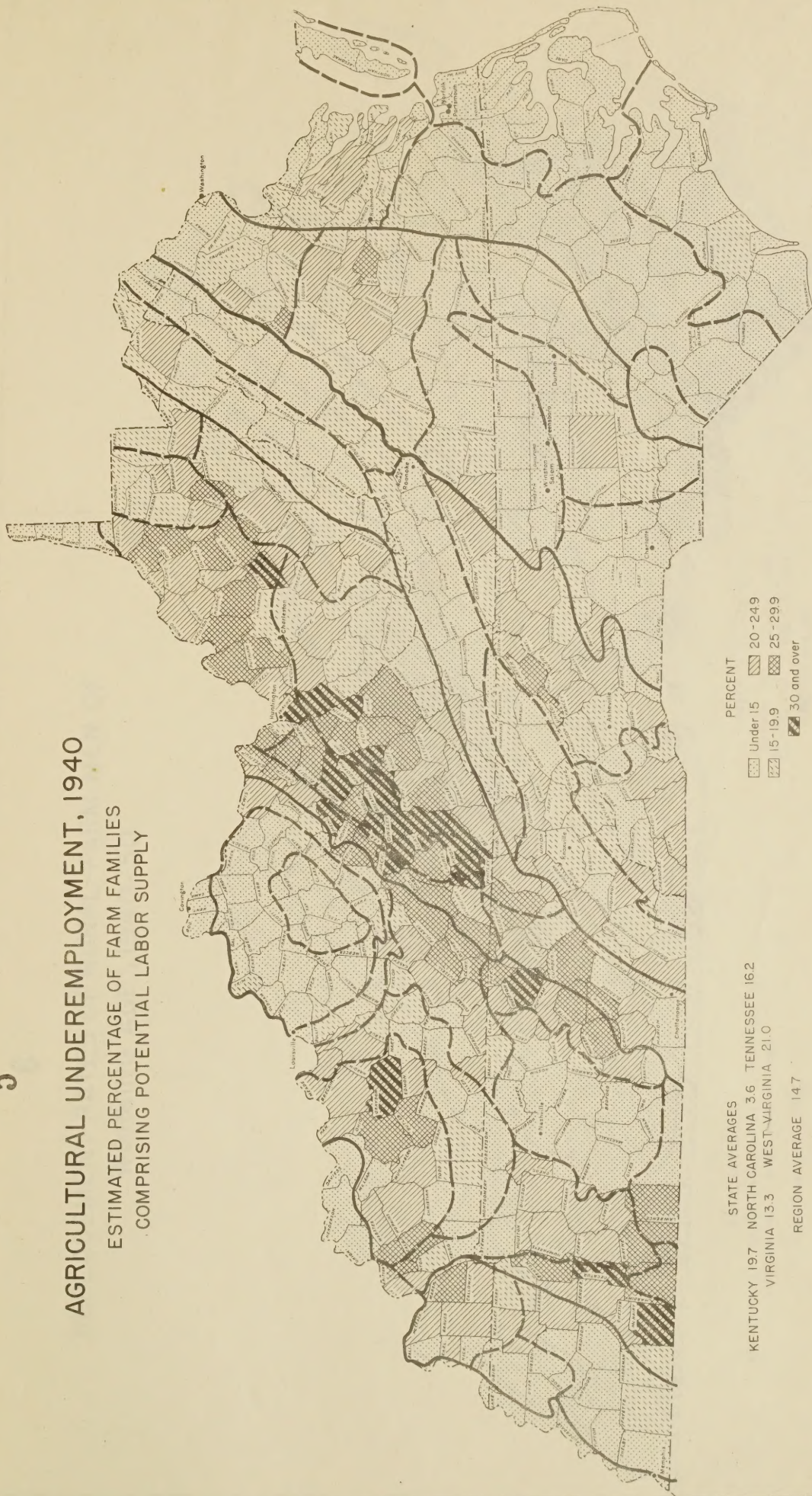


STATE AVERAGES  
 KENTUCKY -3.0 NORTH CAROLINA -3.0 TENNESSEE 1.0  
 VIRGINIA 5.7 WEST VIRGINIA -2.4  
 REGION AVERAGE .61





AGRICULTURAL UNDEREMPLOYMENT, 1940  
ESTIMATED PERCENTAGE OF FARM FAMILIES  
COMPRISING POTENTIAL LABOR SUPPLY



PERCENT

Under 15	20-24.9
15-19.9	25-29.9
30 and over	

STATE AVERAGES

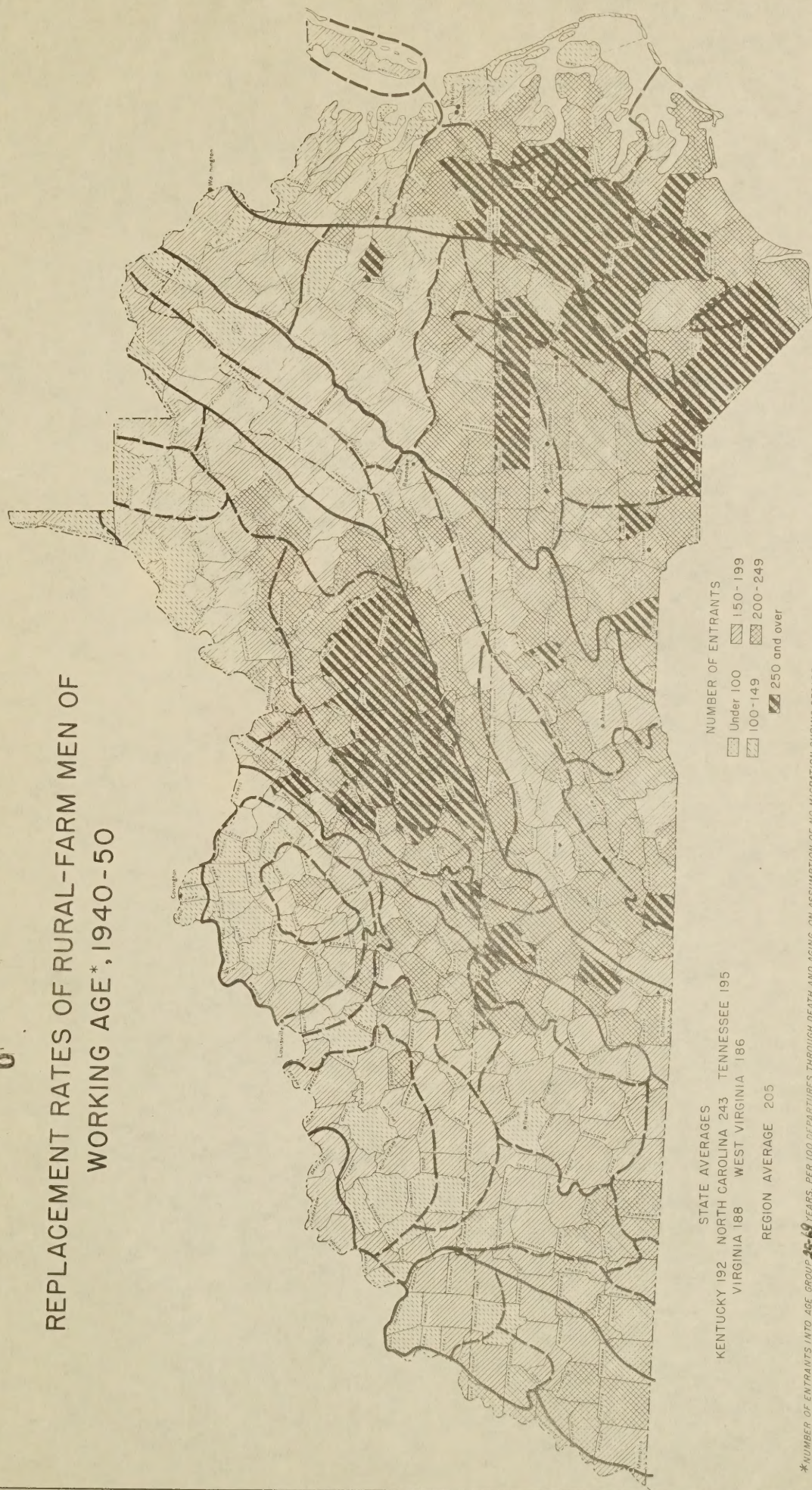
KENTUCKY	19.7	NORTH CAROLINA	3.6	TENNESSEE	16.2
VIRGINIA	13.3	WEST VIRGINIA	21.0		
REGION AVERAGE	14.7				







# REPLACEMENT RATES OF RURAL-FARM MEN OF WORKING AGE\*, 1940-50



\*NUMBER OF ENTRANTS INTO AGE GROUP 15-64 YEARS, PER 100 DEPARTURES THROUGH DEATH AND AGING, ON ASSUMPTION OF NO MIGRATION DURING DECADE



